

VOL. XLIV. No. 4.

APRIL 1959

MECCANO

MAGAZINE



"BRITISH DUCHESS"
ON SPEED TRIALS

15c

DINKY TOYS



No. 734
Supermarine Swift Fighter
Wing Span 2 in. Price 1/9



No. 103 Austin-Healey 100 Sports
(Touring finish)
Length 3 3/8 in. Price 2/9



No. 237
Mercedes Benz Racing Car
Length 3 1/2 in. Price 3/3



No. 156
Rover 75 Saloon
Length 4 in. Price 2/11



No. 162
Ford Zephyr Saloon
Length 3 1/2 in. Price 2/11



No. 440
Tanker 'Mobilgas'
Length 4 1/2 in. Price 2/11



No. 482
Bedford 10-cwt. Van
'Dinky Toys'
Length 3 1/2 in. Price 2/11



No. 676
Armoured Personnel Carrier
Length 3 1/2 in. Price 3/9



No. 623
Army Covered Wagon
Length 4 1/2 in. Price 4/3



No. 290
Double Deck Bus
Length 4 in. Price 4/3

ALL PRICES INCLUDE PURCHASE TAX

MADE IN ENGLAND BY MECCANO LTD., BINNS ROAD, LIVERPOOL 13

Follow Stirling Moss and get a free

DINKY TOYS

TRADE MARK REGISTERED

COLLECTOR'S LICENCE

Stirling
Moss
says:
"I'm the
holder
of Licence
No. 1"

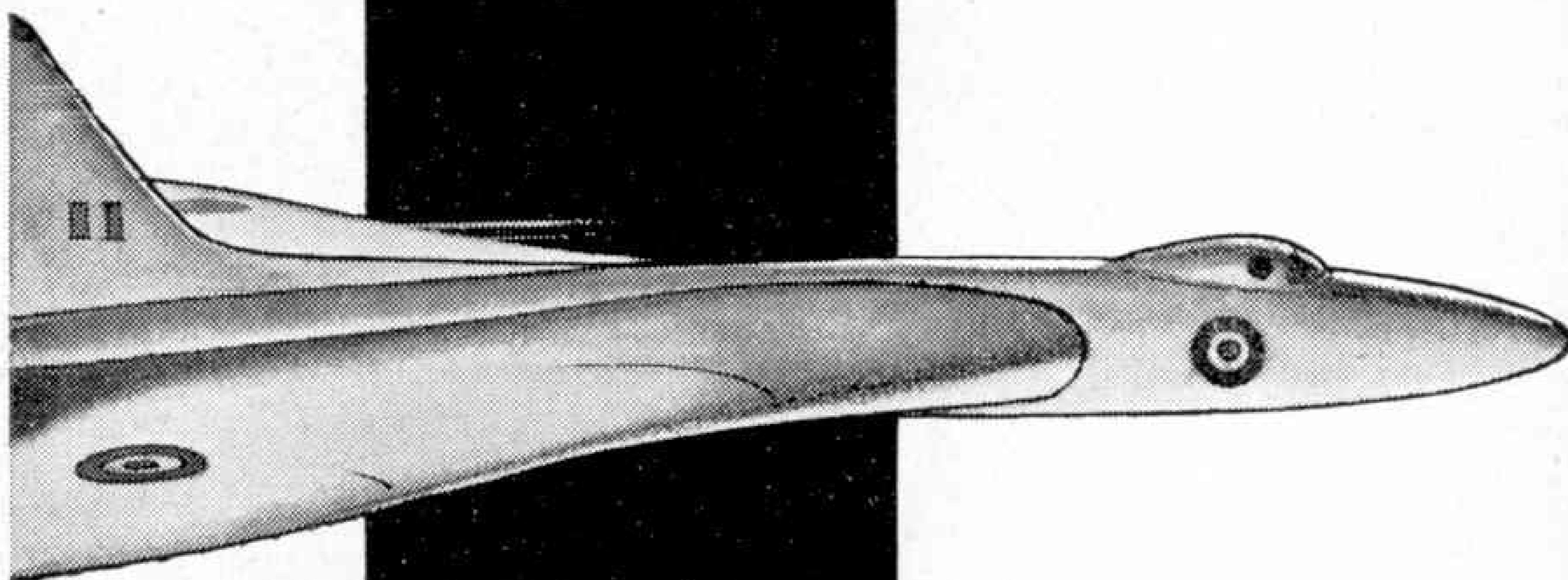


Every Dinky Toys enthusiast can have a Dinky Toys Collector's Licence, which in the Dinky Toys world is equivalent to the driving Licences of real motorists. It has a printed registration number and a full list of Dinky Toys for keeping an up-to-date record of the models collected. Write for your Licence today to the Secretary, Dinky Toys Club, Meccano Limited, Binns Road, Liverpool 13.

REMINDER!

Present holders are reminded that their current Licence expires on the 30th June and application for renewal should be made to the Secretary.

what's missing?



What's missing from this

Conway Vulcan? Something vital on every flight! No jet aircraft would be complete without it—just as no cycle is complete without a Sturmey-Archer Gear. With a Sturmey-Archer Gear to give you a push, you soar up hills like a jet.

For Sturmey-Archer Gears are the finest in the

world; they're precision-made from first-class steel and are built to take the heaviest

no cycle is complete without a

strains. So when you go to choose *your* new cycle you'll know just what to look out for. Ask for one fitted with a Sturmey-Archer Gear and your cycle will be complete!

It's the air-intake that's missing

STURMEY

ARCHER

GEAR

FOR READERS OF MECCANO MAG' **ON 7 DAYS' FREE APPROVAL!**



Here, told in thrilling words and hundreds of unforgettable action pictures, is the FULL STORY of the epic events of World War II—history YOUR FAMILY helped to make! Examine these 6 superb volumes in your home NOW on 7 days' FREE APPROVAL.

SEE WHAT WORLD WAR II WAS REALLY LIKE!

6 AMAZING PICTORIAL VOLUMES



reveal, as never before, the mighty saga of earth-shaking battles, naval and aerial combats, bombing raids, desert and jungle warfare, etc.

SEE THE HORROR AND HEROISM OF WAR!

Hundreds of photos (many taken in the thick of battle at risk of life) show, with vivid realism, scenes on every front—tense moments in bomber and fighter aircraft—on the decks of shell-torn battleships—amazing action close-ups in the midst of battle and blitz.

A LIFETIME POSSESSION!

Worth pounds more than its amazingly low cost, this superb 6-volume set is handsomely bound in leathercloth with titles in gold. Yours, if kept after free examination, for only 12/- down and 7 monthly instalments of 10/- each (total £4.2.0). Cash Price £3.18.0.

POST FORM TODAY!

Fill in form and post in 2d. stamped, unsealed envelope to Dept. A.V.9, People's Home Library, Basted, Sevenoaks, Kent, and books come to you on FREE APPROVAL. Offer applies in U.K. and Eire only, closes April 30.

NO OBLIGATION! NO RISK!



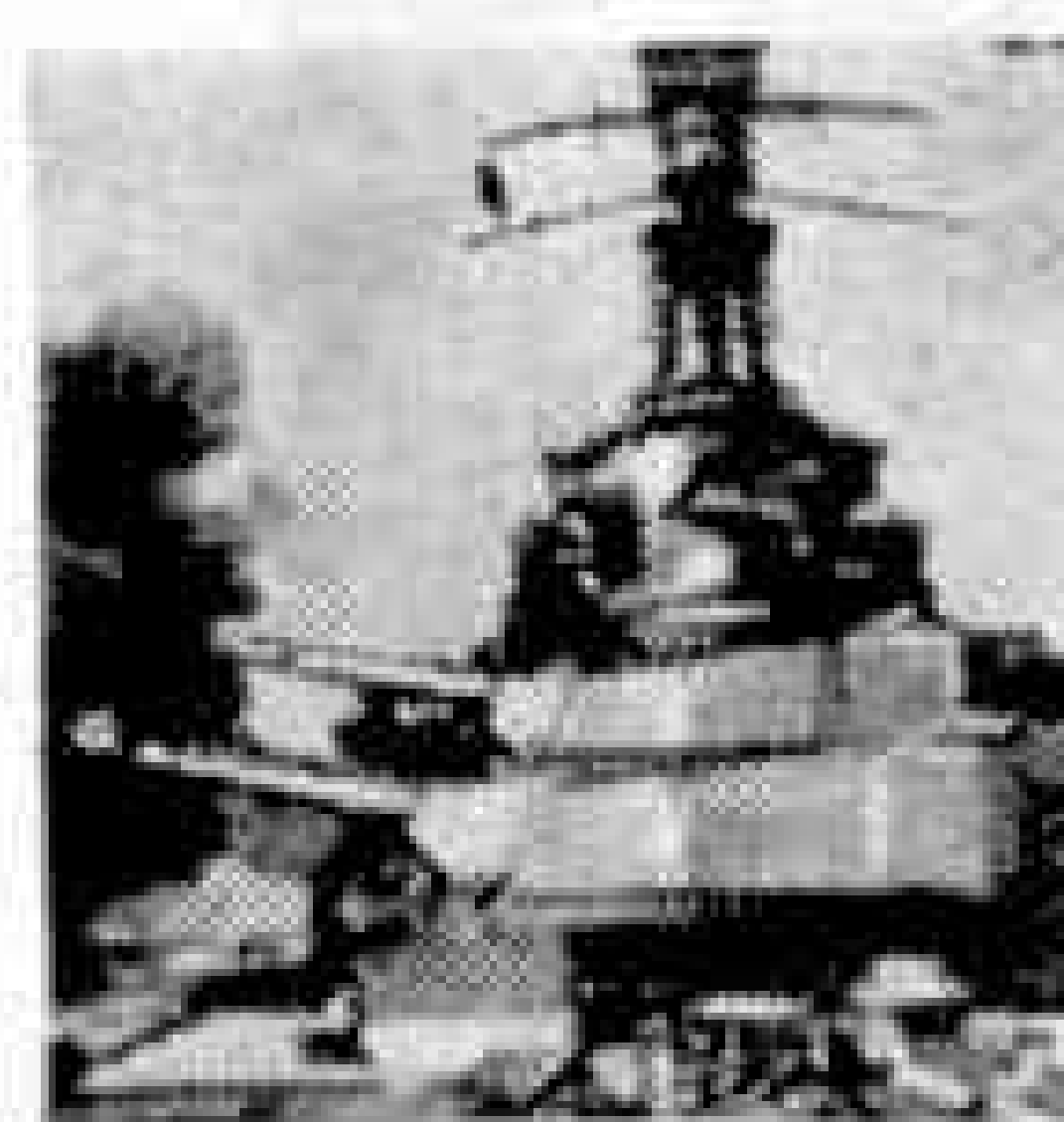
OVER
1,500
BIG PAGES

NEARLY
2,000
DRAMATIC
ON-THE-SPOT
PHOTOS, MAPS
& DRAWINGS

Nearly 200,000
WORDS OF TEXT

A complete record of the SIX MOST HISTORIC YEARS

These six magnificent volumes unfold living history that is part of your own story. From their thrilling pages you will realize,



for the first time, just what the years 1939-1945 meant to the world. You will be proud to own this beautifully produced record of the undying story in which your family played its part. Lose no time in examining the set for yourself—free of charge—ACT NOW!

SEND NO MONEY NOW!

To: Dept. A.V.9, People's Home Library (Odhams Press Ltd.), Basted, Sevenoaks, Kent. Please send me, WITHOUT OBLIGATION TO PURCHASE, the 6-volume "War in Pictures." I will EITHER return books in good condition, carriage paid, within 8 days, OR send first payment of 12/- eight days after delivery, then 7 monthly instalments of 10/- each (£4.2.0). ALTERNATIVELY, I will send cash price of £3.18.0 eight days after delivery.

Signature..... Occupation.....
(Persons under 21 will be sent a Guarantor Form). Age, if under 21.....

Put tick where applicable: Cash ☐ Terms ☐ Householder ☐

Furnished Premises ☐ Unfurnished Premises ☐ Hotel ☐

Lodgings ☐ Live with Parents ☐

BLOCK LETTERS BELOW

NAME

Full Postal ADDRESS

A.V.9/April '59

Firmly affix
2d. stamp
in margin

BUCCANEER IS BACK!



“BUCCANEER”

one of the most popular and well loved of pre-war board games, is, as its name implies, a swashbuckling, adventurous game full of interest, fun, and ingenuity. Produced to Waddington's own standards of high quality, “Buccaneer” contains all the thrills of voyages to Treasure Island, and bringing home the treasure . . . including realistic looking diamonds, rubies, bars of gold, pearls, and barrels of rum!

Equally valuable cargoes can be captured on the High Seas . . . or you can trade for cargo at a foreign port.

FOR 2 TO 6 PLAYERS

25/-

(Including Purchase Tax)

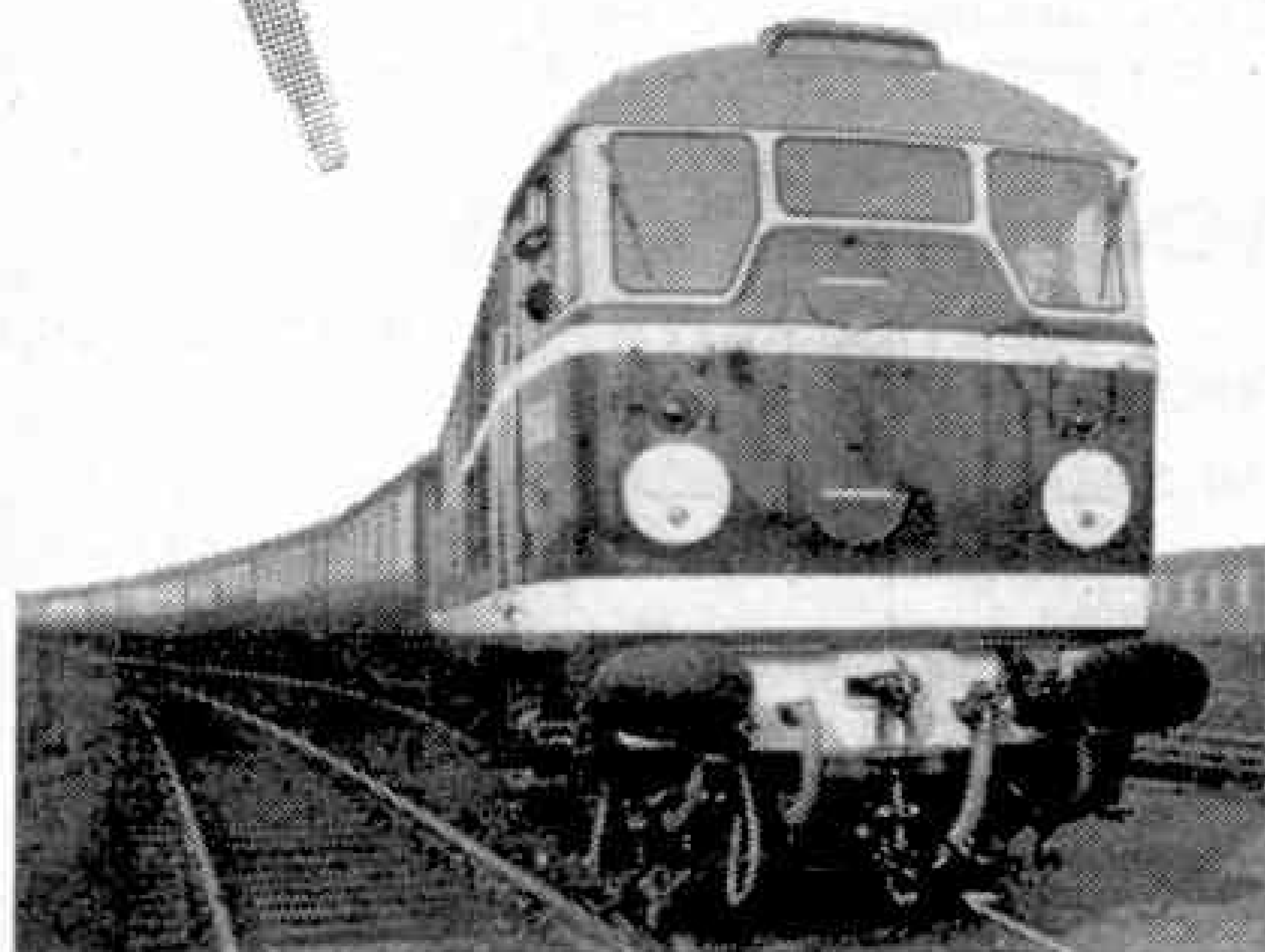
Published by

JOHN WADDINGTON LIMITED

40 WAKEFIELD ROAD, LEEDS 10. Phone : Leeds 72244

London Office : 43 Hertford Street, W.1. Phone : GRO 8701

Here's a brand NEW CLUB
to join TO-DAY!
THE DIA-DEMA COLOUR CLUB



It brings you exclusive 35 mm Colour Transparencies on a host of unusual subjects never before available . . . and for the first time in railway history you can obtain a complete collection in colour of

BRITISH AND CONTINENTAL RAILWAYS

Become a Founder Member of the Dia-Dema Colour Club and start collecting these unique colour photographs.

There are two categories of Membership bringing you 16 or 32 colour transparencies a year but there are other benefits too. Members will be able to acquire a special Railways series which records the development of the Railways. The old veterans of steam can now be viewed and compared with the latest type of Diesel engine—a truly unique achievement that will whet the appetite of every true railway enthusiast.

Every quarter set of transparencies is sent to you in a specially designed wallet together with authentic information on the subjects.

Every member receives a free album every year in which to store the transparencies and information supplied.

For more details about this opportunity that no railway enthusiast should miss ;—

MAIL THIS COUPON TO-DAY

I am interested
to hear more
about the
DIA-DEMA
COLOUR CLUB
please send details
and literature to :

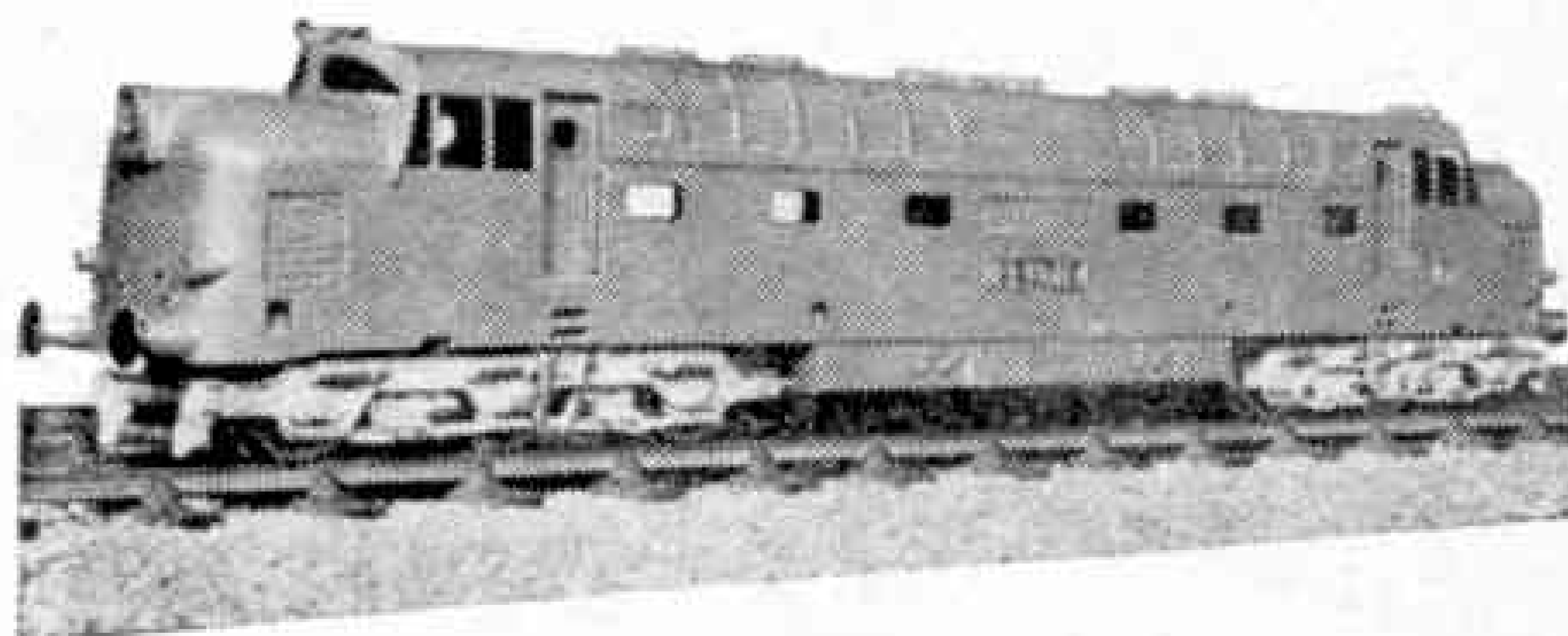
NAME _____

ADDRESS _____

Mail to DIA-DEMA COLOUR CLUB LTD.,
60 BERNERS STREET, LONDON, W.1

EVERYTHING FOR MODEL RAILWAYS IN ALL GAUGES

Come to Bassett-Lowke Model Shops where you will find the widest possible choice of standard equipment in all popular gauges and forms of motive power. Our experts will be pleased to discuss them with you. More than that we build, convert or rebuild models to your individual and special requirements. The adjoining list gives you a brief idea of what is always available in the Bassett-Lowke Model Shops:



- Gauge "O" Steam, Electric and Spring-drive Locomotives and equipment
 - The full range of Hornby-Dublo, Trix "00" and Tri-ang "00" and "TT"
 - Peco-Way and Minilay
We are main agents for Peco products in London West Central Area
 - Wrenn Track "00" and "TT"
 - Welkut Track "00"
 - H & M Electrical Equipment
 - Woodside Stations and Lineside Buildings
 - Private Owners' Wagons "0", "00" and "TT"
 - Accessories by Master-Models, Nucro, Bilteezi, Rickwood, etc.
- Books, drawings, scenic items and paints.
In fact everything for Model Railway construction!

Everything for your choice at

BASSETT-LOWKE model shops

LONDON: 112 HIGH HOLBORN

NORTHAMPTON: 18 KINGSWELL STREET

MANCHESTER: 28 CORPORATION STREET

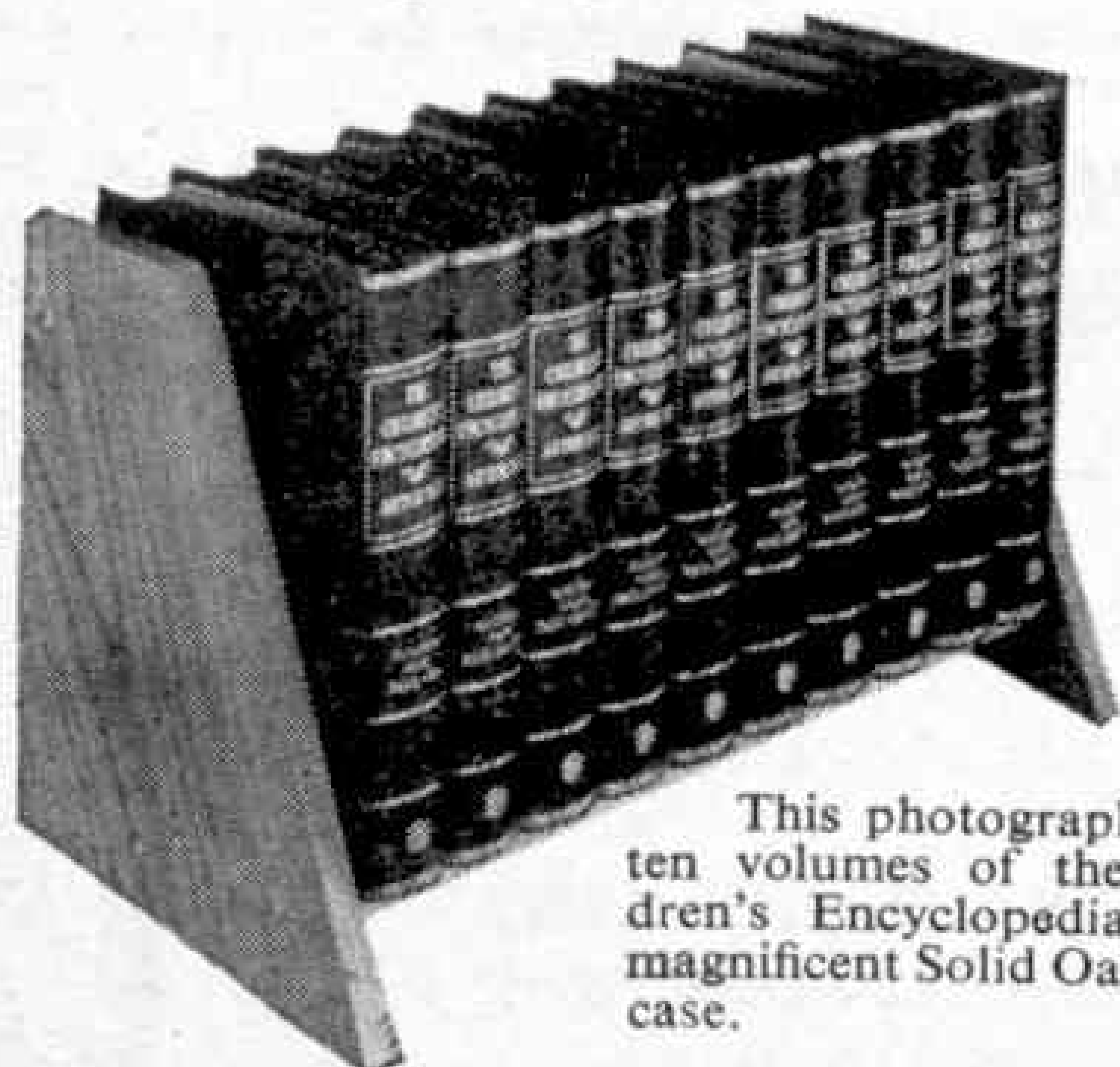
WRITE FOR "00" AND "TT" LEAFLET TO BASSETT-LOWKE, NORTHAMPTON



It is terrific fun reading when you have **Arthur Mee's CHILDREN'S ENCYCLOPEDIA**

THIS wonderful Encyclopedia has been specially written to make your reading interesting and exciting. Thousands of photographs, maps and diagrams with masses of colour, make it easy to understand both for schoolwork and leisure.

Ask your Mother or Father to send off this coupon for the FREE 28-page coloured brochure which fully describes the "Children's Encyclopedia".



This photograph shows ten volumes of the "Children's Encyclopedia" in a magnificent Solid Oak Bookcase.

To: THE EDUCATIONAL BOOK CO. LTD.,
NEW FLEETWAY HOUSE, FARRINGDON ST.,
LONDON E.C.4.

Please send me, without obligation, the FREE coloured booklet describing the Children's Encyclopedia.

NAME _____

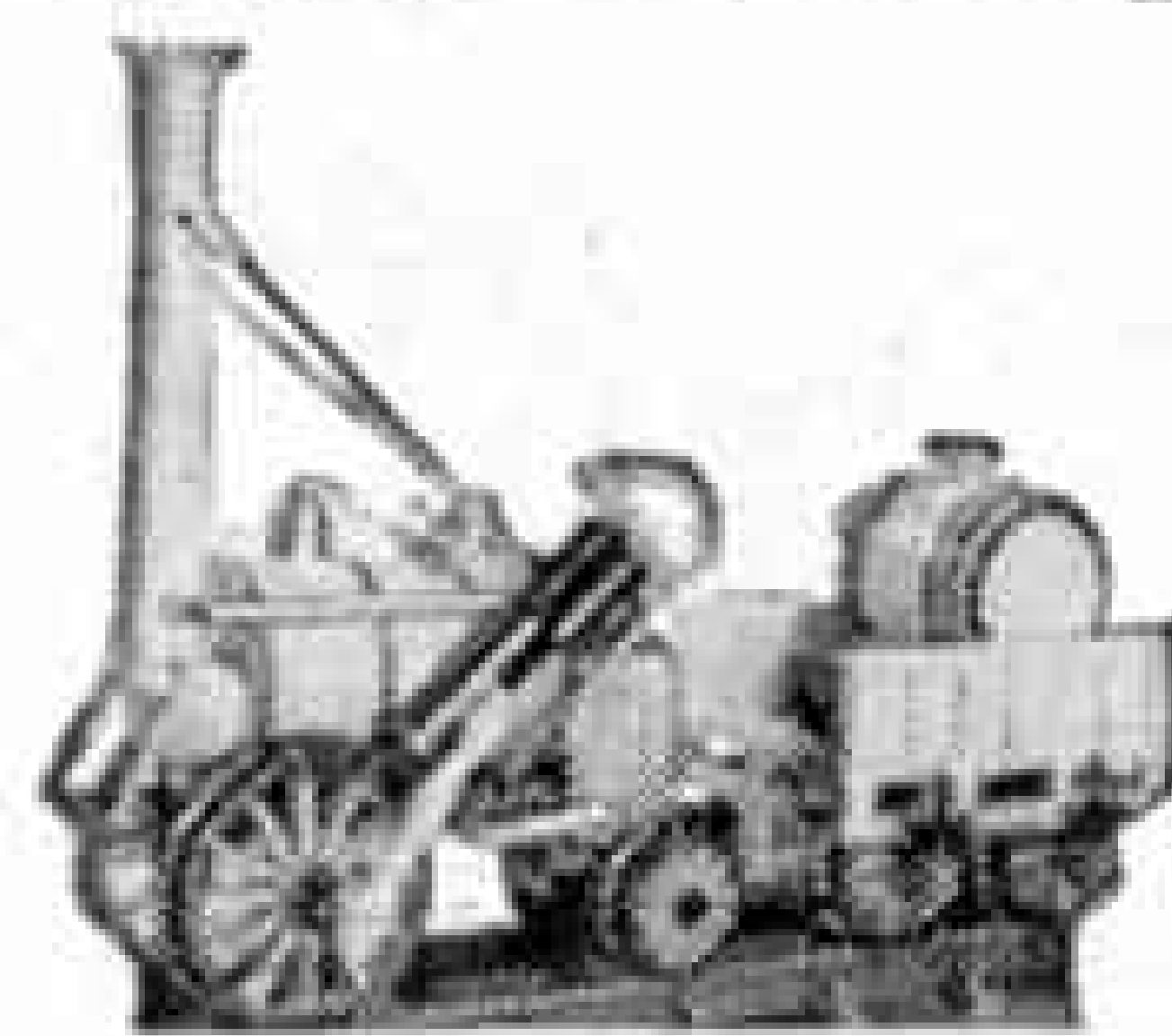
ADDRESS _____

AT LAST!

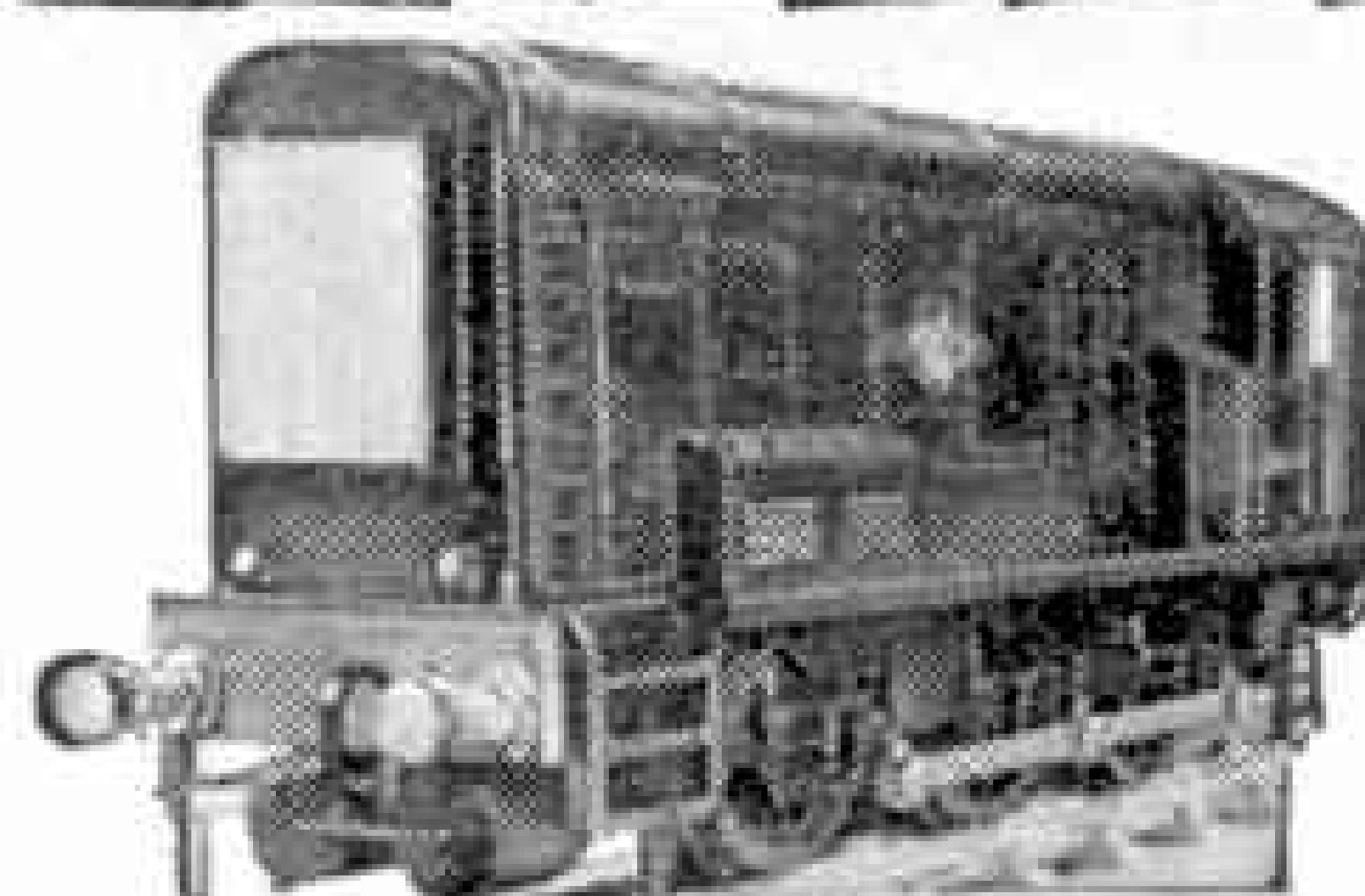
PLASTIC SCALE MODEL RAILWAY KITS

**Authentic Models with Moving Parts
Can be used on OO and HO Gauge Tracks**

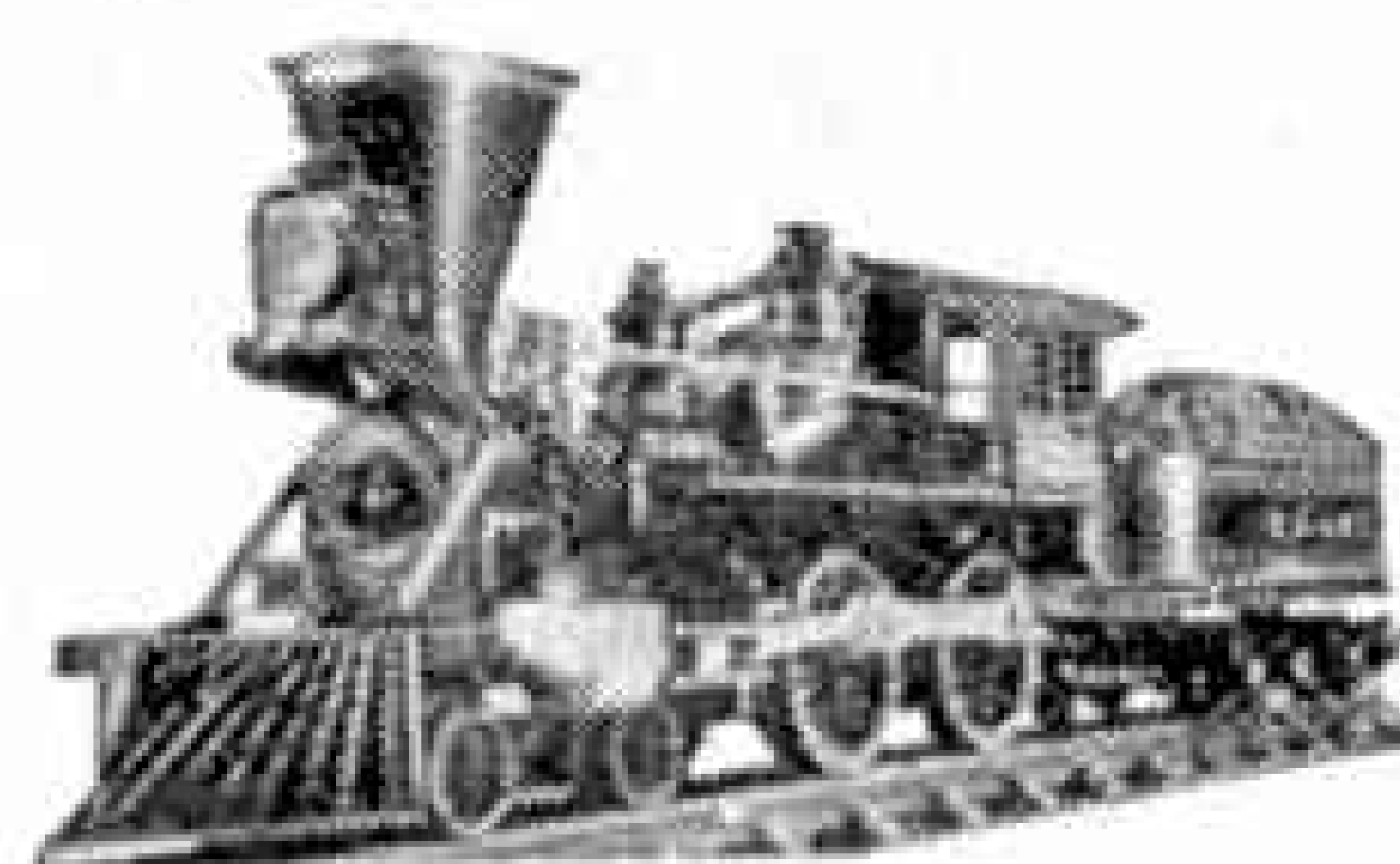
Brand-New! Exciting! Just what you've always wanted! Assemble these thrilling new 'Kitmaster' railway kits yourself . . . you'll get hours of pleasure and satisfaction. No ordinary models these. They move . . . are built to scale . . . finely detailed—look just like the real thing. That's why you get that professional finish every time with all 'Kitmaster' models. Start your collection now . . . you'll find plenty of thrills and fun with these authentic new 'Kitmaster' plastic scale models.



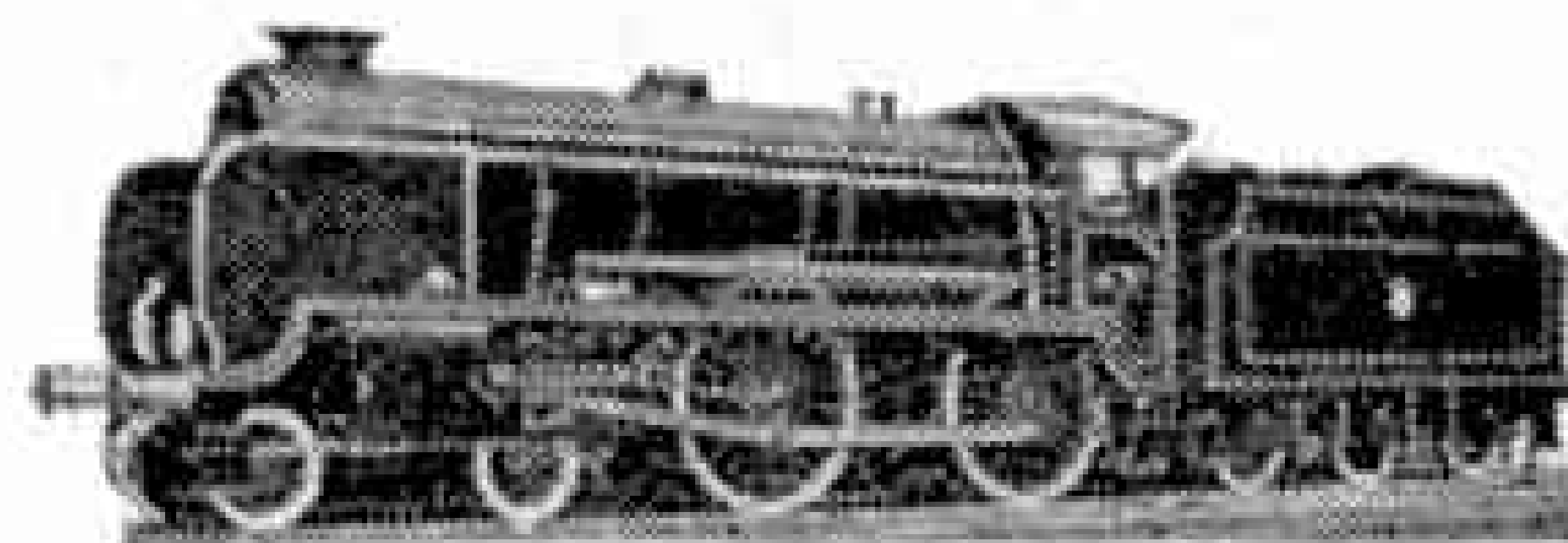
No.1. Stephenson's "Rocket" 4/6d.



No.2. Diesel Electric Shunter 4/6d.

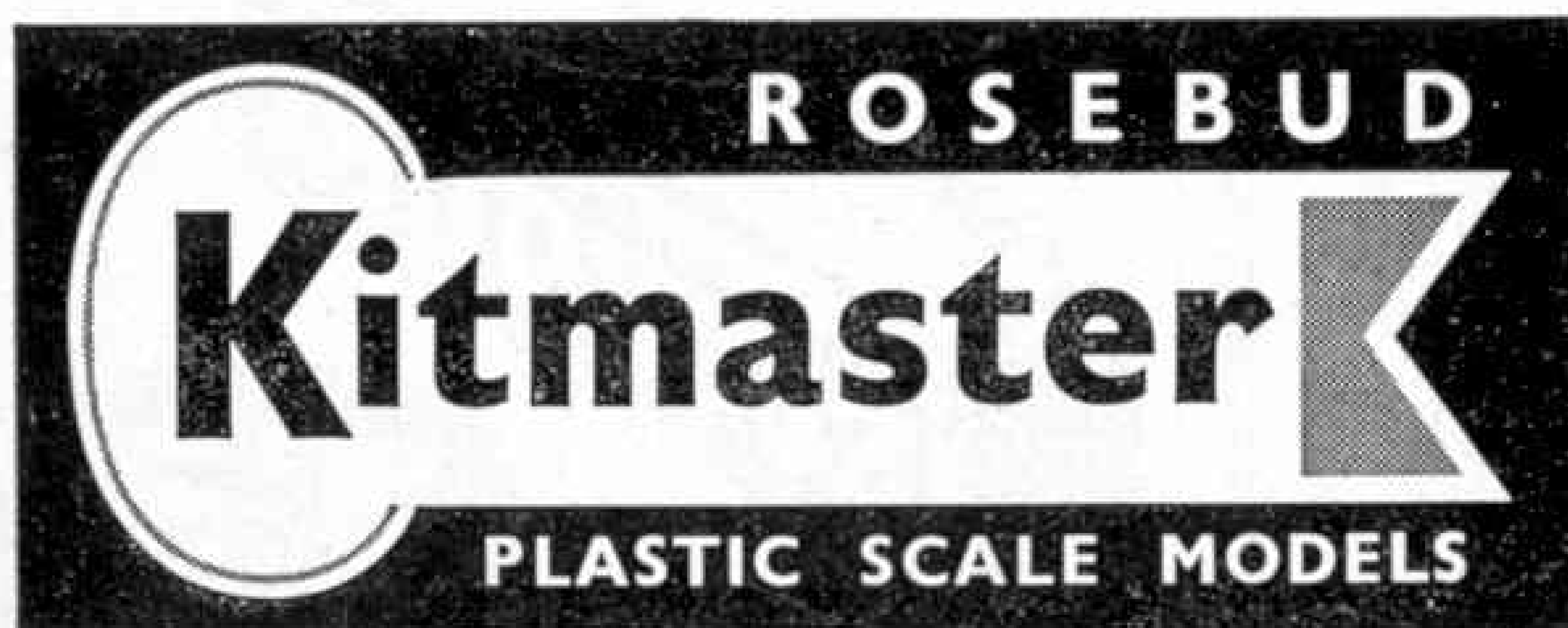


No.3. Early American "General" 6/6d.



No.5. Schools Class "Harrow" 7/6d.

- * A fresh, new model is coming out every month
- * Step by step instructions, coloured leaflet and transfers included
- * Special plastic cement is enclosed for a rigid, lasting fit
- * Supplied in all good model shops and toy shops



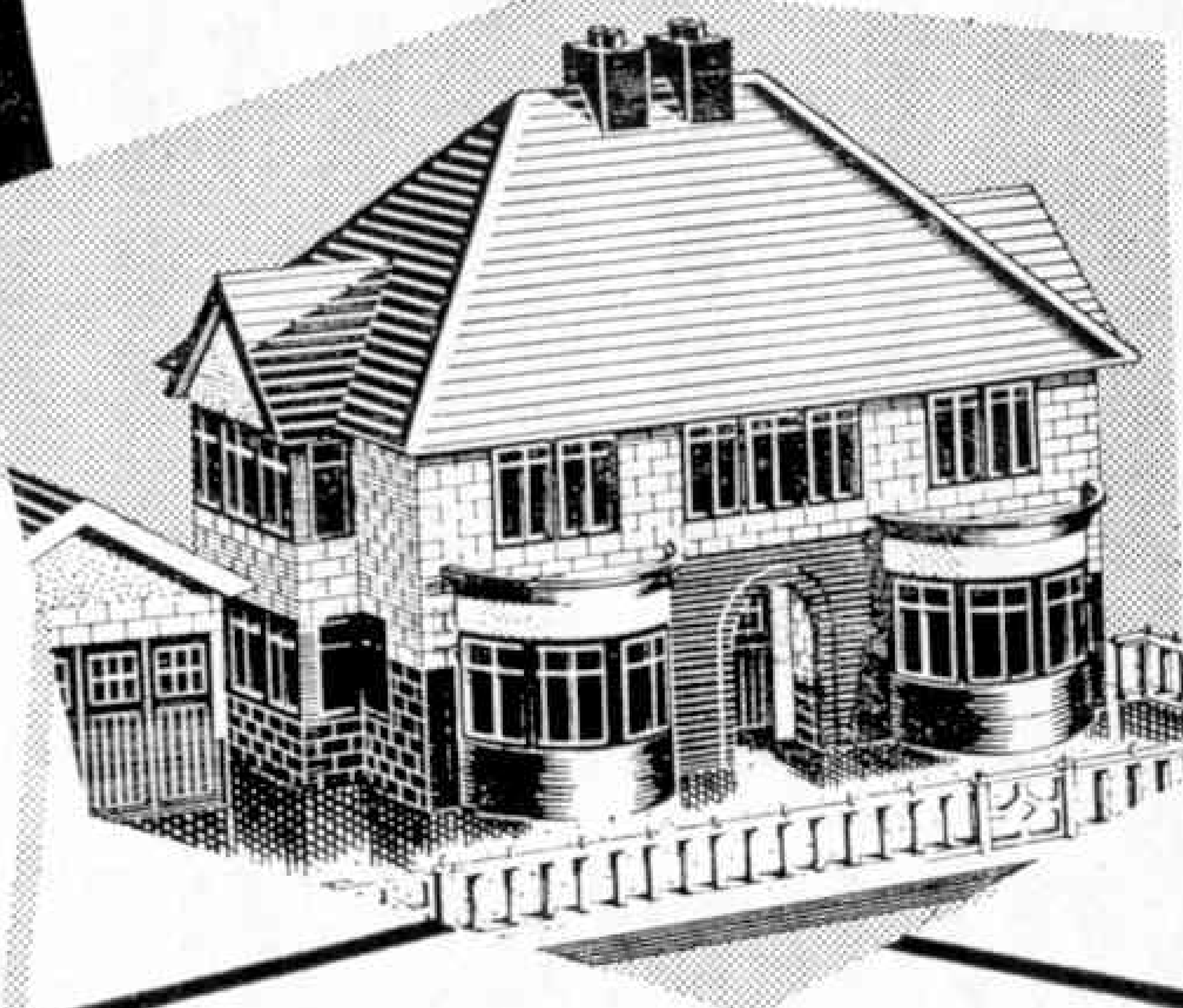
Get yours today!

ROSEBUD KITMASTER LIMITED · RAUNDS · NORTHAMPTONSHIRE

BAYKO

BUILDING SETS

See the full
range of sets
and ask for
further de-
tails at your
local agents
etc.



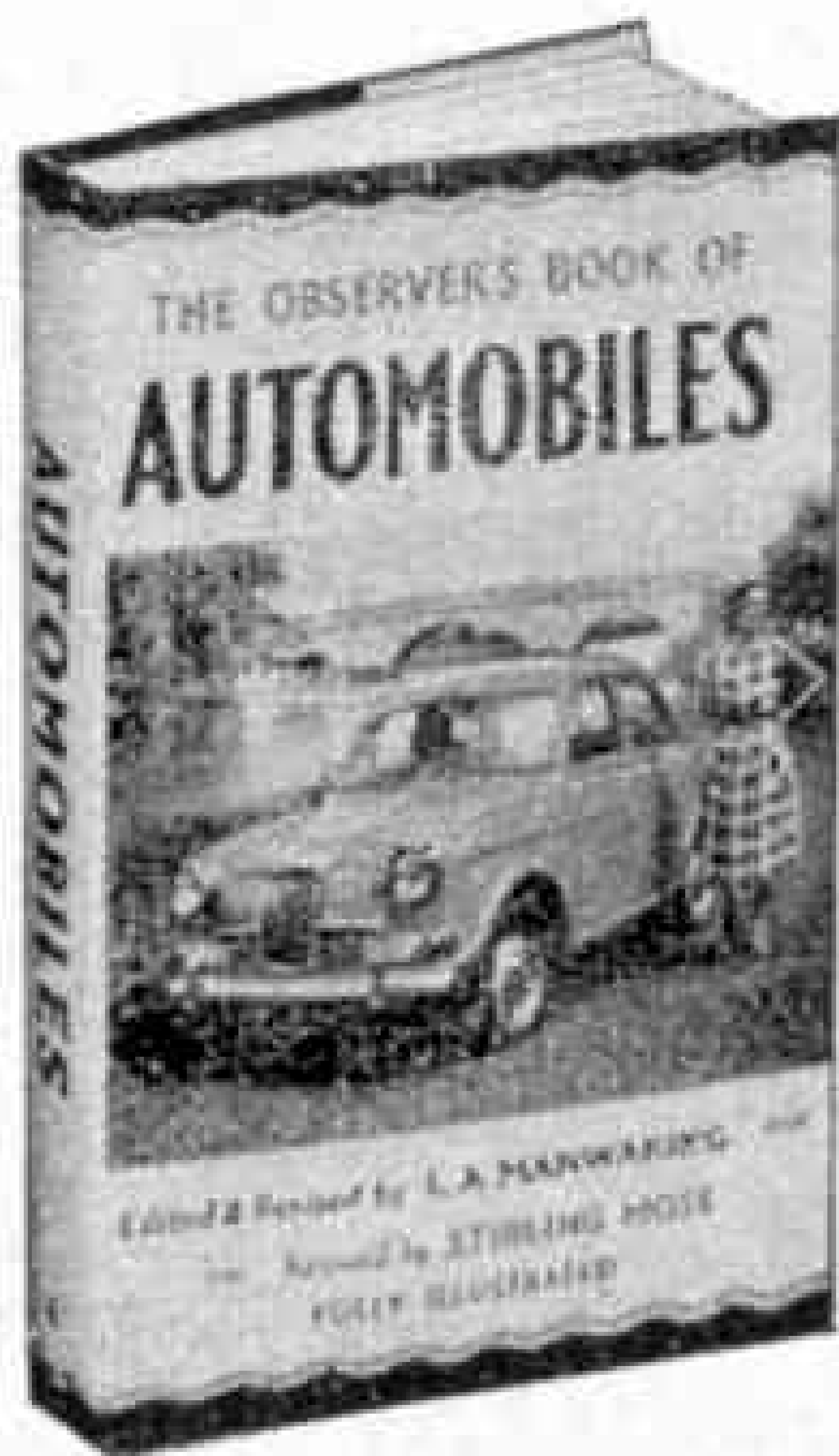
A Bayko Set provides the ideal assortment of bricks, doors, windows, etc., from which any type of building can be modelled. The models are easily dismantled and the parts used again to build a different model as often as you wish.

OBTAINABLE FROM LEADING STORES AND TOY SPECIALISTS

Manufactured by PLIMPTON ENGINEERING CO. LTD. LIVERPOOL 1.

— 1959 EDITION —

THE OBSERVER'S BOOK OF AUTOMOBILES



Edited and
Revised by
L.A. MANWARING

Foreword by
STIRLING MOSS

104
different makes
254
photographs
86
sketches

only 5/- net

Have you a list of the 28 titles
in this great series? If not, write to

FREDERICK WARNE & Co. Ltd.
1-4 Bedford Court, London WC.2.

STICK TO SECCOTINE

Regd

*it sticks
everything!*



1'3
PER TUBE

Sole Manufacturers —

MCCAW, STEVENSON & ORR LTD., BELFAST

Tri-ang

Regd. Trade Mark



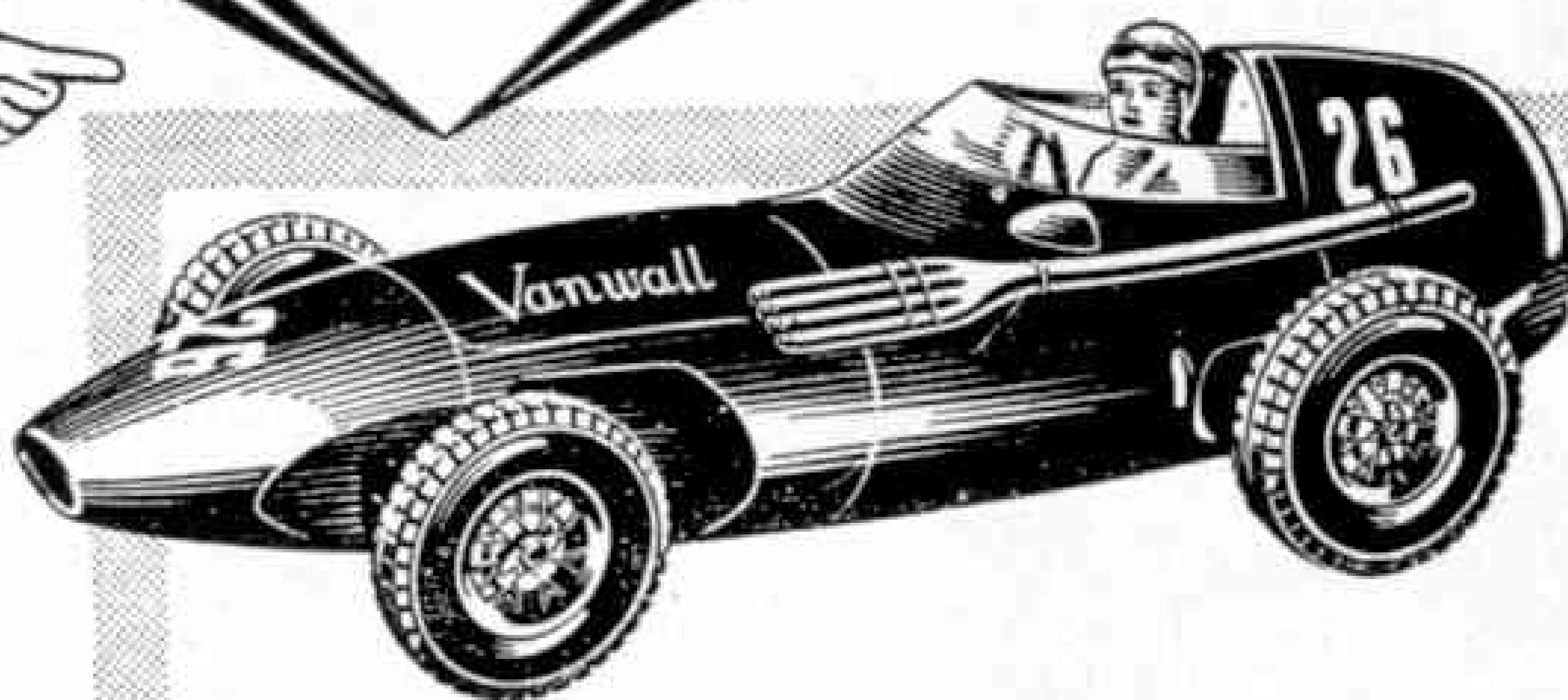
1/20th Scale
MODEL CARS

True-to-scale electric models
all with forward, neutral and
reverse gears—rubber tyres.



VANWALL

The first British Racing Car successfully to challenge the might of the Italian Ferraris and Maseratis.



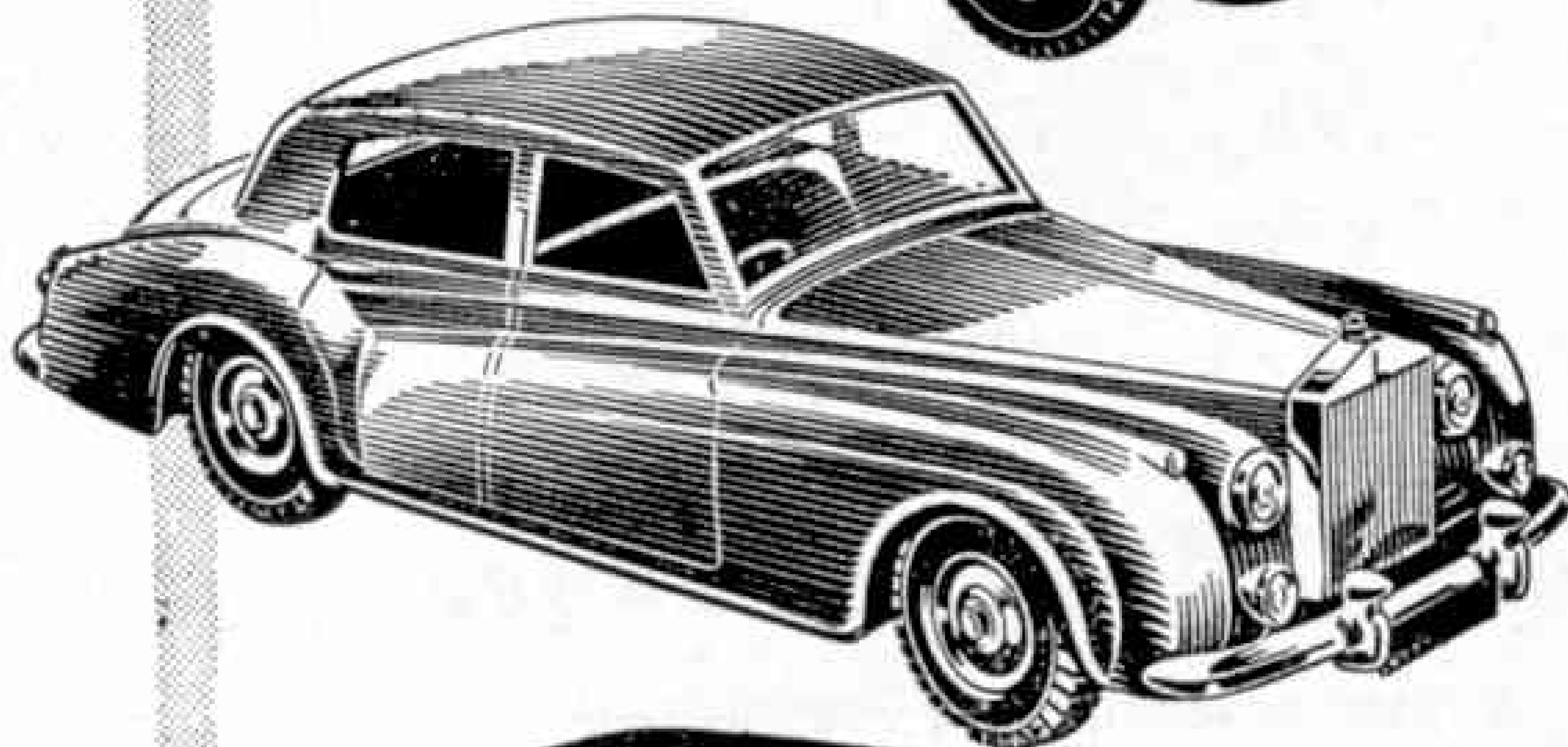
BENTLEY

The same characteristics as the vintage Bentleys of the 1920's. Speed, reliability, sturdiness and craftsmanship.



ROLLS-ROYCE

The Rolls-Royce is recognised throughout the world as a symbol of the highest quality. A beautiful model car.



VAUXHALL VICTOR

Introduced in February 1957, the Victor caused a stir through its unusually shaped windscreen and body styling.



The Motive power is provided by 1½ volt torch batteries. Each car requires two batteries except the Rolls-Royce and Bentley which require three.

Tri-ang Minic Models are built in Britain by

MINIC LIMITED, MERTON, LONDON S.W.19



Today you view the world
from a mountain
other men have built

"If I have seen farther," said Sir Isaac Newton, "it is by standing on the shoulders of giants."

You are seeking a career where exhilarating heights of achievement are open. In engineering today these heights are prepared for you. Other men have built so well, and in such a diversity of ways, that a thousand projects are waiting for you to expand and develop.

For nearly sixty years Metropolitan-Vickers have been pioneers in engineering and research technique, and have led the way in methods of training.

Opportunities are available for sixth form boys and girls to be trained as professional engineers with Metropolitan-Vickers either by means of a Pre-University Training Course for those who wish to study at university, or through a Sandwich Course combining training in industry with academic study.

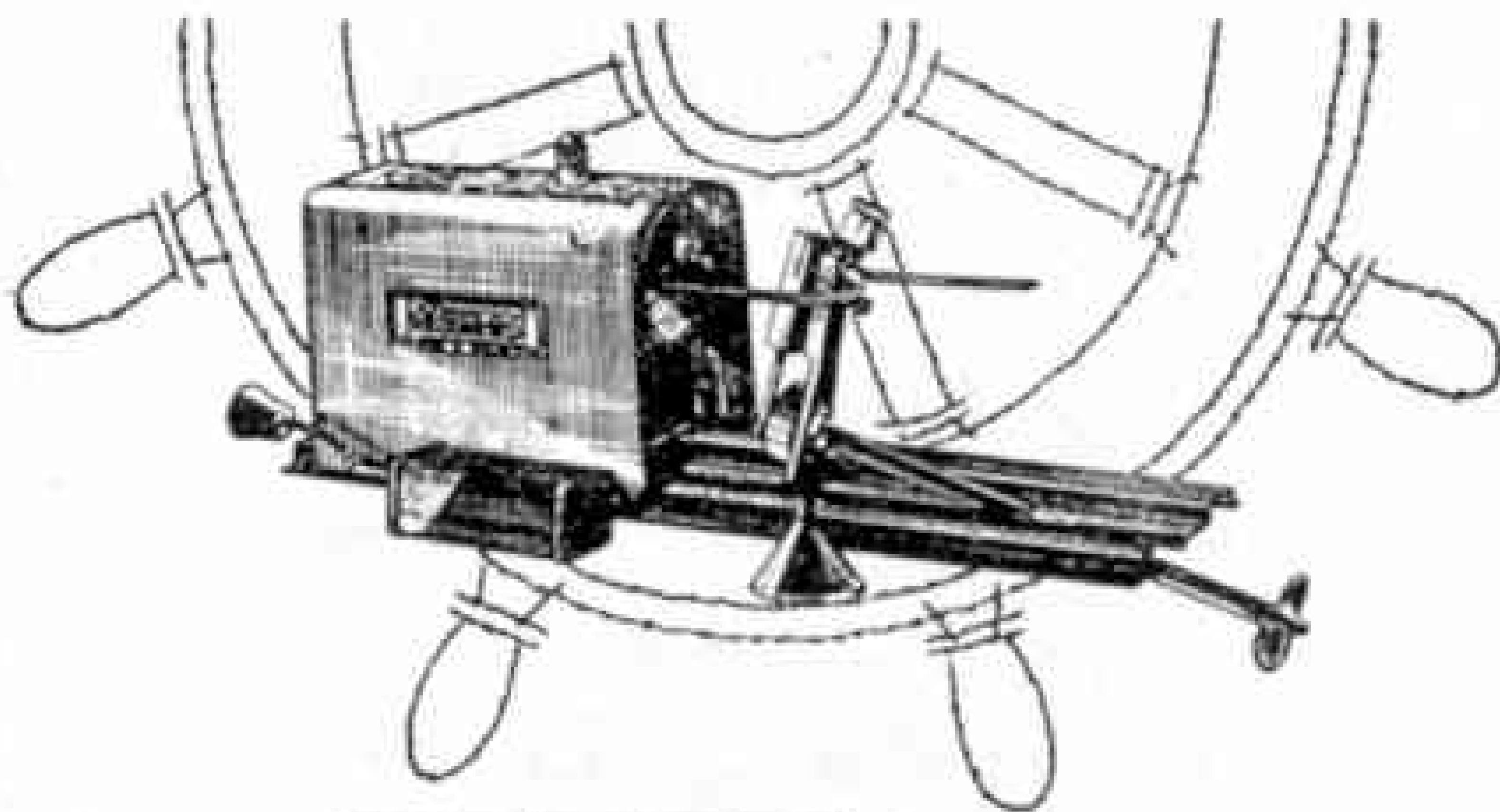
For further particulars of these courses, write, giving details of the type of training in which you are interested to:—

THE MANAGER, EDUCATION DEPARTMENT

METROPOLITAN-VICKERS

ELECTRICAL CO LTD · TRAFFORD PARK · MANCHESTER 17

An A.E.I. Company A/A802



a model **STEAM** marine engine

OF HIGHEST QUALITY, AND PERFORMANCE

This latest addition to the famous range of "Mamod" model steam engines is the ideal power unit for model boats, with a length of 20" and over. An extremely lively unit with many refinements including chromium plated windshield, heat insulation and a complete lubrication system. Price 45/- including P.T.

Mamod

MALINS (ENGINEERS) LTD, 25-31, CAMDEN STREET, BIRMINGHAM, 1.

MODEL LORRY



65/- EACH

You can Dismantle it-Just like the real thing!

Made up from 65 standardised parts—all replaceable.

Shaft drive. Universal coupling. Ackermann-type steering. Floating rear bogie. Rubber tyres. Powerful Spring Drive. Comes ready assembled.

Length: 14 in.

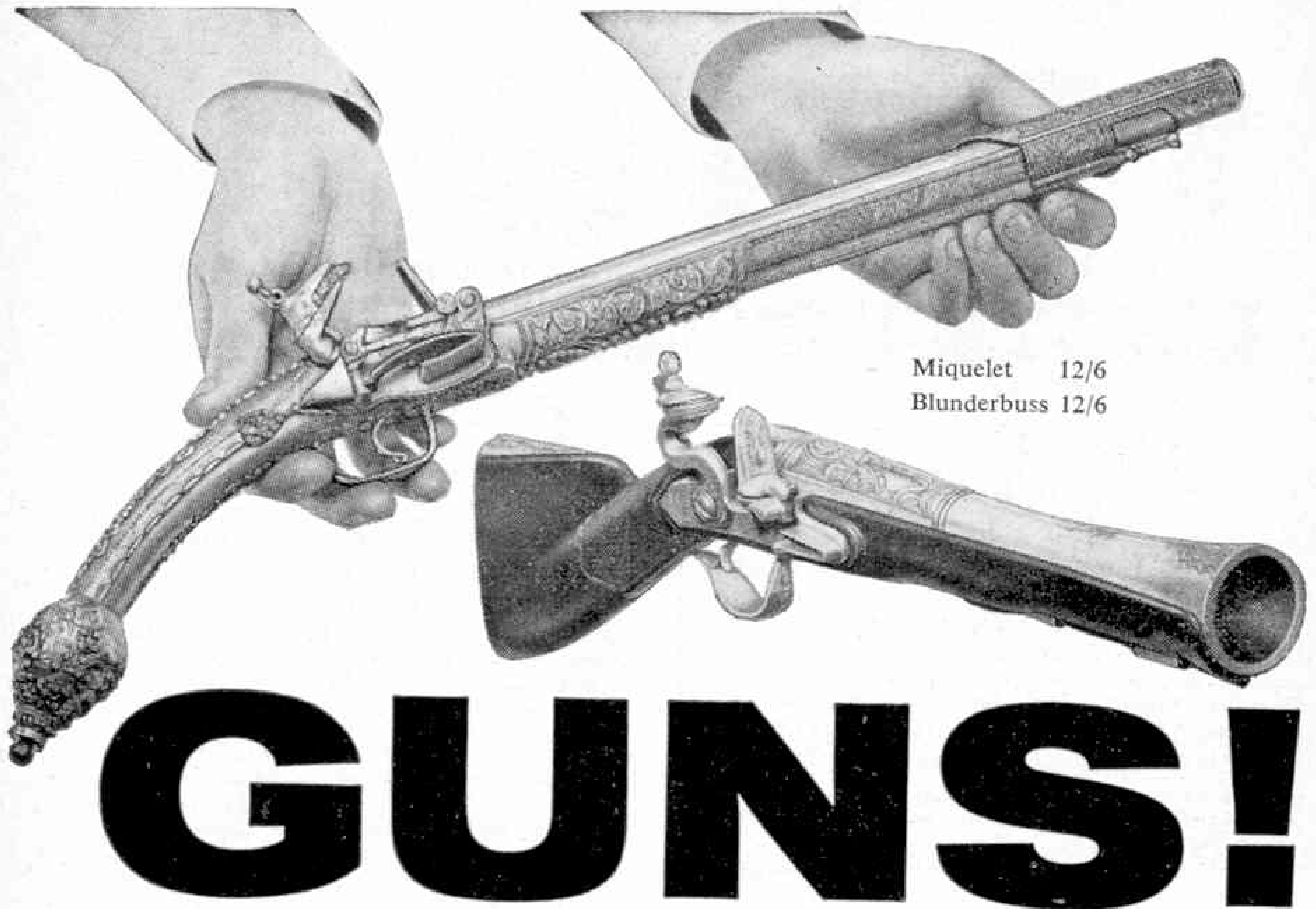
Height: 4 in.

ASK YOUR DEALER TO SHOW YOU THESE WONDERFUL MODELS!

DYSON 8-TON TRAILER

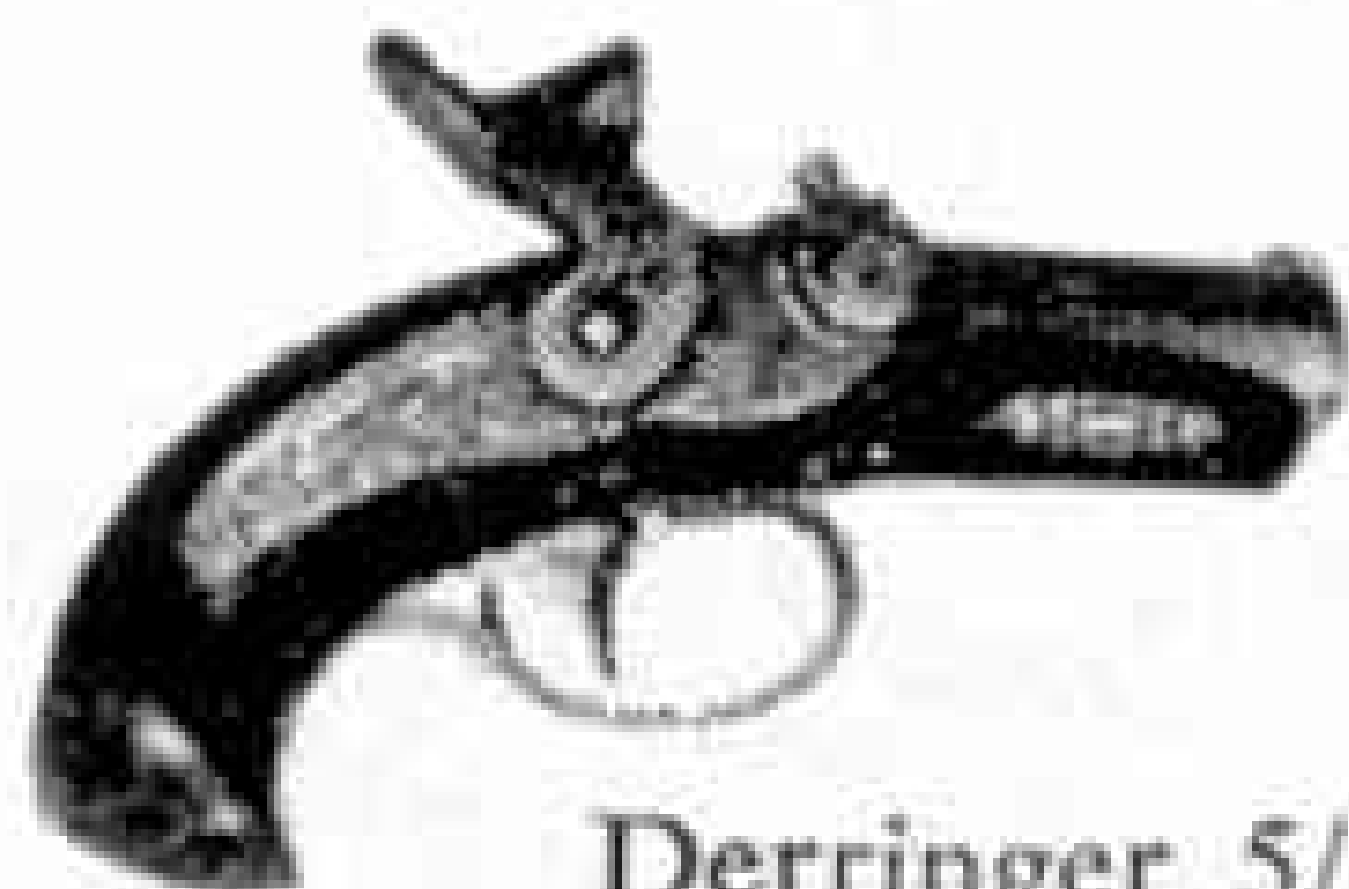
Attaches to rear of the FODEN LORRY. And dismantles in the same manner. **18/9 EACH**

ABBAY-CORINTHIAN GAMES CO.
LONDON S.W.1



Miquelet 12/6
Blunderbuss 12/6

**add these exciting antique guns to your collection
of models built from REVELL AUTHENTIC KITS**



Derringer 5/11



Pepperbox 6/11



Duelling Pistol 6/11



Colt .45 7/11

The Blunderbuss . . . terror of the Spanish Main.
The Miquelet . . . ornate weapon of the Arab slave traders.
They're exactly scaled from the originals.

Every plastic part strikingly simulates wood and metal,
highlighting intricate firing mechanism and
flamboyant ornamentation.

Guns that changed the course of history.

'Wild Bill' Hickok's Colt .45.

The tiny Derringer that killed Abe Lincoln.

The six barrel Highwayman's Pepperbox and
the French gentleman's Duelling Pistol.

They're great fun to build, and a sure fire success
displayed on your wall or their superb stands.

REVELL (Great Britain) LTD
Maidstone House
25/27 Berners Street London W1



MANUFACTURED IN GREAT BRITAIN

FOR YOUR

★ U.K. only for 1959

1959 MODERNISATION SCHEME

The new items listed below will be available later in the year.

EXCITING NEW HORNBY-DUBLO MODELS

NEW TWO-RAIL TRACK

Hornby-Dublo two-rail track system (1) will be introduced during 1959. The rail will be solid drawn nickel silver mounted on a high quality moulded base. Realistic in appearance, free from corrosion and with high conductivity, the Hornby-Dublo two-rail system will be the best in the world.

TWO NEW LOCOMOTIVES

An 0-6-0 Tank Locomotive and a new L.M.R. City class locomotive—the "City of London". Both for two-track systems.

NEW KITS FOR CONSTRUCTING RAILWAY BUILDINGS

Hornby-Dublo are soon to introduce Stations and Engine Sheds in partly finished kit form. They are made of highest quality polystyrene and can be easily and quickly assembled. Their detail is second to none and to give absolute realism they all have glazed windows.

MODELS INCLUDE:

SUBURBAN THROUGH STATION, (7)
ISLAND PLATFORM (8) with canopy

above, 2 and 4 road ENGINE SHEDS (6) (based on the L.M.R. main running shed at Chester) and GOODS DEPOT (3).

All except the Island Platform are designed to accommodate ELECTRIC LIGHTING, kits for which will be available this year.

NEW PASSENGER ROLLING STOCK

Southern Region Suburban Coaches in malachite green livery, Restaurant Car in maroon.

NEW SUPER-DETAIL FREIGHT ROLLING STOCK

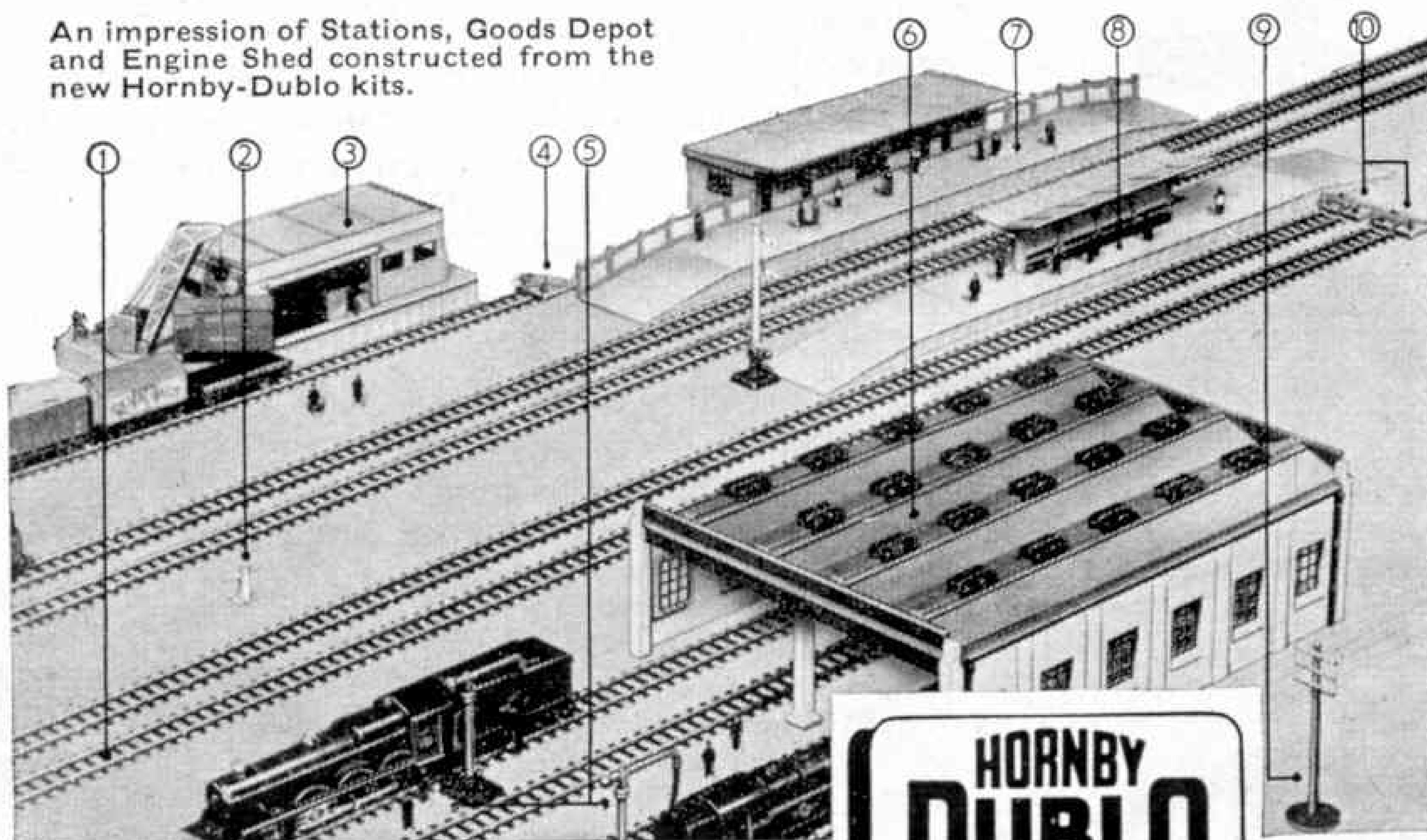
Including: B.R. standard Horse Box, W.R. 10-ton Fruit Van (Fruit D), I.C.I. Liquid Chlorine Tank Wagon. Low-sided Wagon with mounted Ferguson Tractor, and an International Oil Tank Wagon.

ALSO NEW

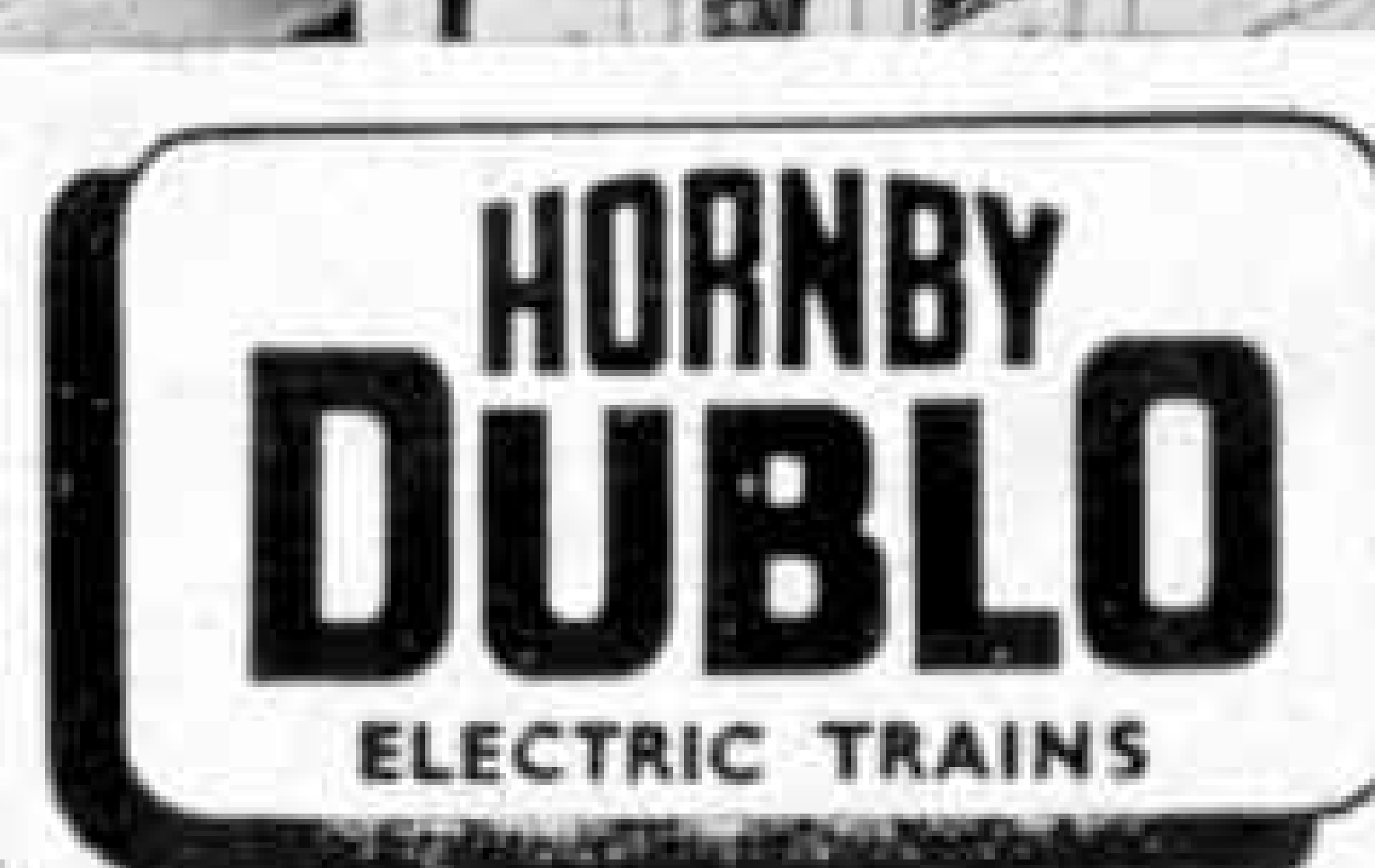
Platelayers' Hut, Gradient Posts (2) and Telegraph Poles (9),
Two-Rail Buffer Stop (4), Two-Rail Illuminated Buffer Stop (10).

LOOK OUT FOR THESE EXCITING MODELS

An impression of Stations, Goods Depot and Engine Shed constructed from the new Hornby-Dublo kits.



Made and guaranteed by
MECCANO LTD, Binns Road, Liverpool 13



Next Month: "THE MARVEL OF MODERN SIGNALLING"

MECCANO

MAGAZINE

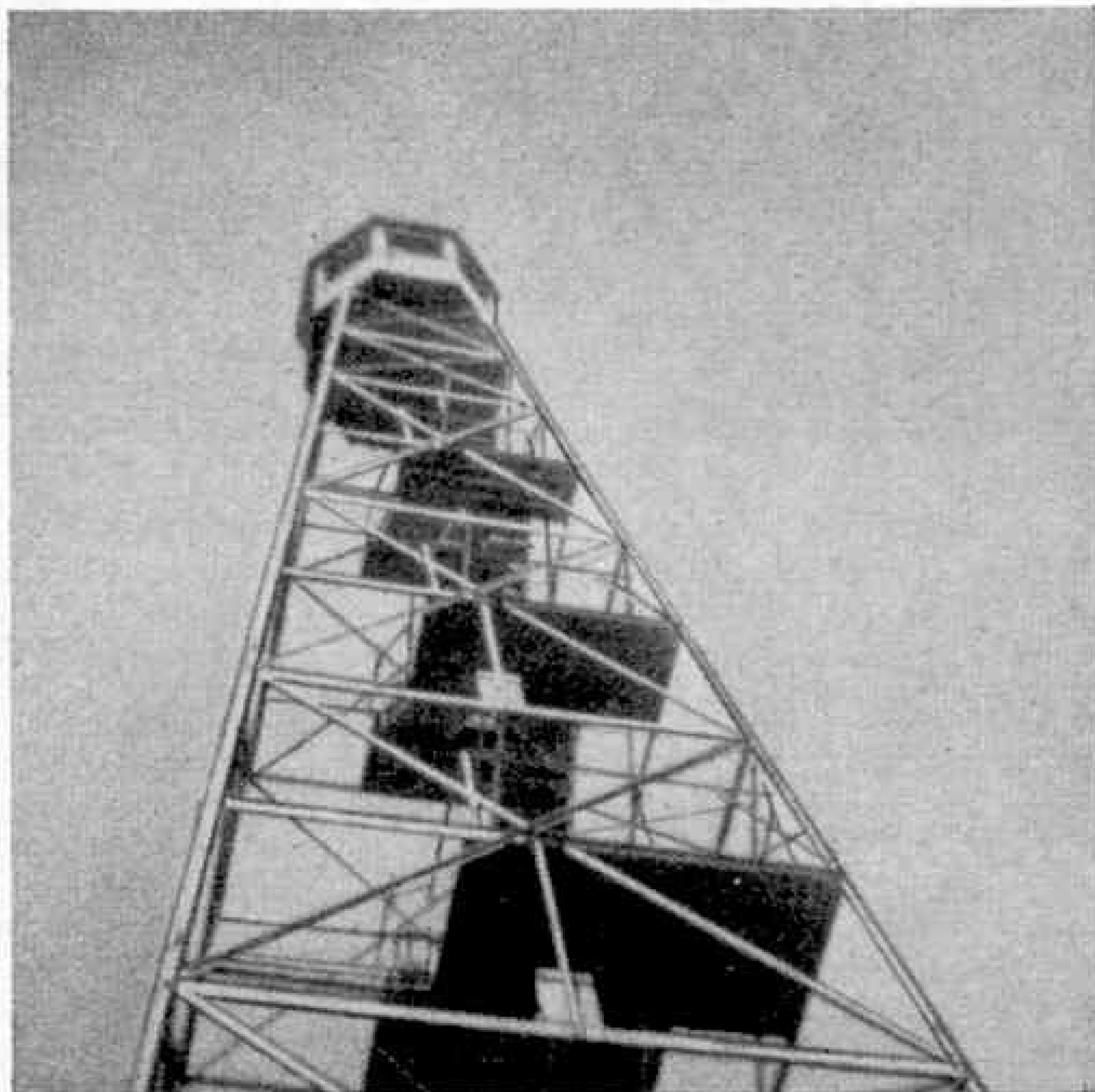
Editorial Office:
Binns Road
Liverpool 13
England

EDITOR : FRANK RILEY, B.Sc.

Vol. XLIV
No. 4
April 1959

POWER!

ONE of the articles in this issue of the Magazine tells what happens inside the rather mysterious atomic power station, distinguished by its huge sphere, at Dounreay, in the far north of Scotland. There is no real mystery about it, of course, but it does draw attention to the modern



What on Earth is this used for? Send your answer, on a postcard, to reach the Editorial Office by 7th April. A small prize will be awarded to the sender of the first correct solution opened on that date.

large-scale planning and construction of various kinds of power stations. Most of you will know why this is done—because power is essential in industry, and our command of it largely decides our standards of living.

Now coal, oil and even uranium and other atomic power "fuels" will not last

for ever, so what of the future? In this connection it is interesting to remember the origin of the forms of power that we use today. A good story is told about George Stephenson, the great railway pioneer. According to this, while he and some friends were watching a train running at speed on a railway some distance away, he asked what power was driving the train. Those present made various suggestions, and finally he told them it was the light of the Sun. This of course was right—it is remarkable that George never appears to have been wrong, except that here he should rather perhaps have said the Sun's rays—for the coal burning in the fire-box of the engine was the substance, wonderfully transformed, of plants that grew under the influence of sunlight tens of thousands of years ago.

In a way all our forms of power today depend upon the heat of the Sun, but so far we have made very little progress in efforts to harness this power more directly. In a large furnace heated by the Sun's rays focused on it a temperature of 5,000 deg. F. has been reached, however. There are interesting devices too in which sunlight induces electric currents directly in the elements silicon or selenium. Such devices have been fitted in the heads of space rockets, artificial satellites—and even in the helmets of soldiers—to make radio communication possible without batteries.

The Editor

"British Duchess"

First of the New BP 42,000 Ton Tankers

By
the Editor

OUR cover picture this month is an unusual and attractive aerial view of a ship at sea. The vessel is a 42,000-ton tanker, the largest built on the Clyde up to the time of its completion, and it is seen setting up a splendid bow wave while on its speed trials over the famous course off the coast of the Isle of Arran, in the Firth of Clyde.

The tanker is the *British Duchess*, the first of the new 42,000-ton class of the British Petroleum Co. Ltd. Today oil is the world's most valuable seaborne cargo, and so great is the demand for it that ever larger tankers are being built or planned to carry it from the oil fields to the distant countries in which it is used in quantity. Until the appearance of the new class, the largest vessels of the BP tanker fleet were of 32,000 tons deadweight. Now plans are afoot for tankers even larger than the new ones, and indeed included in the two million deadweight tons of tankers on order for BP at the end of last year were twelve of 50,000 tons and seven of 65,000 tons.

Larger tankers need larger docks and jetties to accommodate them. BP have already completed a jetty on Loch Long, Scotland, that is capable of handling vessels up to 100,000 tons, and work is proceeding on a new deep water port in Milford Haven that will provide



A royal launch for the largest BP tanker, the 42,000-ton "British Duchess". This vessel was built by John Brown and Co. Ltd., at their Clydebank shipyard, and launched in June of last year by H.R.H. The Duchess of Gloucester. Our cover this month gives an air view of the "British Duchess" on her trial speed runs off the Isle of Arran on 1st October last year. For these illustrations, and the photograph on which our cover is based, I am indebted to the British Petroleum Company Limited.

accommodation for two tankers of this class at a time.

But let us return to the 42,000-ton tanker seen on our cover. The *British Duchess* was launched from the Clydebank yard of John Brown and Co. Ltd. in June of last year by the Duchess of Gloucester. After fitting out, she was dry docked at Liverpool in readiness to start her trials on 28th September, and it was during these trials that the photograph on which our cover is

based was taken.

Such vessels as the *British Duchess* are in strong contrast with those first used for transporting oil overseas. The first ocean cargo of oil to reach England came from the United States in 1861, two years after the first oil well had been drilled in Pennsylvania. The ship was the brig *Elizabeth Watts*, of only 224 tons, and the

oil was carried in barrels. The oil the 42,000-ton *British Duchess* carries is accommodated in giant tanks below decks, from which it is pumped through pipes on the arrival of the tanker at the ports where her cargo is to be delivered.

The carriage of large volumes of liquid cargo in tanks naturally brings with it important problems. As the ship rolls and pitches, the liquid is liable to surging, and to prevent this from being excessive the free surface of the liquid is reduced by dividing the cargo space into separate tanks by means of bulkheads placed athwartship. There is usually a further sub-division by means of two bulkheads running fore and aft, and in the case of such a large tanker as the *British Duchess* there are three of these instead of two. A further feature of the construction of a modern tanker is the provision of extra bulkheads at the forward and after ends of the cargo carrying space. These form what are called cofferdams, and they isolate the cargo from the forehold and the engine room respectively.

There is no difficulty in recognising a tanker when at sea or in dock. In the usual design there are three "islands" above the main deck. These are the forecastle, the bridge and the poop, and they are connected by fore and aft gangways raised about 8 ft. above the deck, which provide a convenient way of moving about in the vessel.

Of the islands, the forecastle is not now used as a crew space, but helps to provide

extra bouyancy and protection from seas breaking over the bows of the vessel. The bridge really consists of four decks. The uppermost, known familiarly as the "monkey island", carries the standard magnetic compass, the radar scanner and the wireless direction-finder. Below it is the navigation bridge deck, the control centre of the ship. Here are the wheelhouse, equipped with every modern device for controlling the vessel and ensuring safe navigation, the chart room and the radio office. In most BP tanker ships the two decks below the bridge provide accommodation for the Master and senior officers.

Another feature that is characteristic of tankers is that the engines are placed aft instead of amidships,

as the position of the funnel shows. This is not a matter of convenience and economy only. It is also a safety measure. One advantage is that there is no need for a tunnel for the propeller shaft running through the cargo tanks, as would be the case if the engines were amidships. Such a tunnel would be difficult to keep oil-tight, and of course it would occupy space that could be better devoted to cargo.

Tankers usually spend more time at sea than cargo vessels, and for this reason the BP Tanker Co. sets a particularly high standard in regard to both crew accommodation and sustenance of the crew. In the *British Duchess* every member of the crew, with the exception of apprentices and galley boys, has a single berth cabin to himself, and this is

Another view of the "*British Duchess*" at speed during her trials.





Swinging the giant funnel carrying the BP emblem aboard the "British Duchess" in the fitting out yard at Clydebank.

speed when loaded is about 16 knots. This speed is reached through a single screw driven by geared steam turbines of Pametrada basis design made by John Brown and Co. Ltd., which develop service power of 16,000 shaft horse power, with a maximum of 17,600 s.h.p.

The number of compartments into which space within the *British Duchess* is divided is 44. Thirty-eight of these are oil cargo compartments and 6 water ballast compartments, main cargo pump room, engine and boiler room and after peak tank. The accommodation includes two double berth state rooms, for

commodious, comfortable and well furnished.

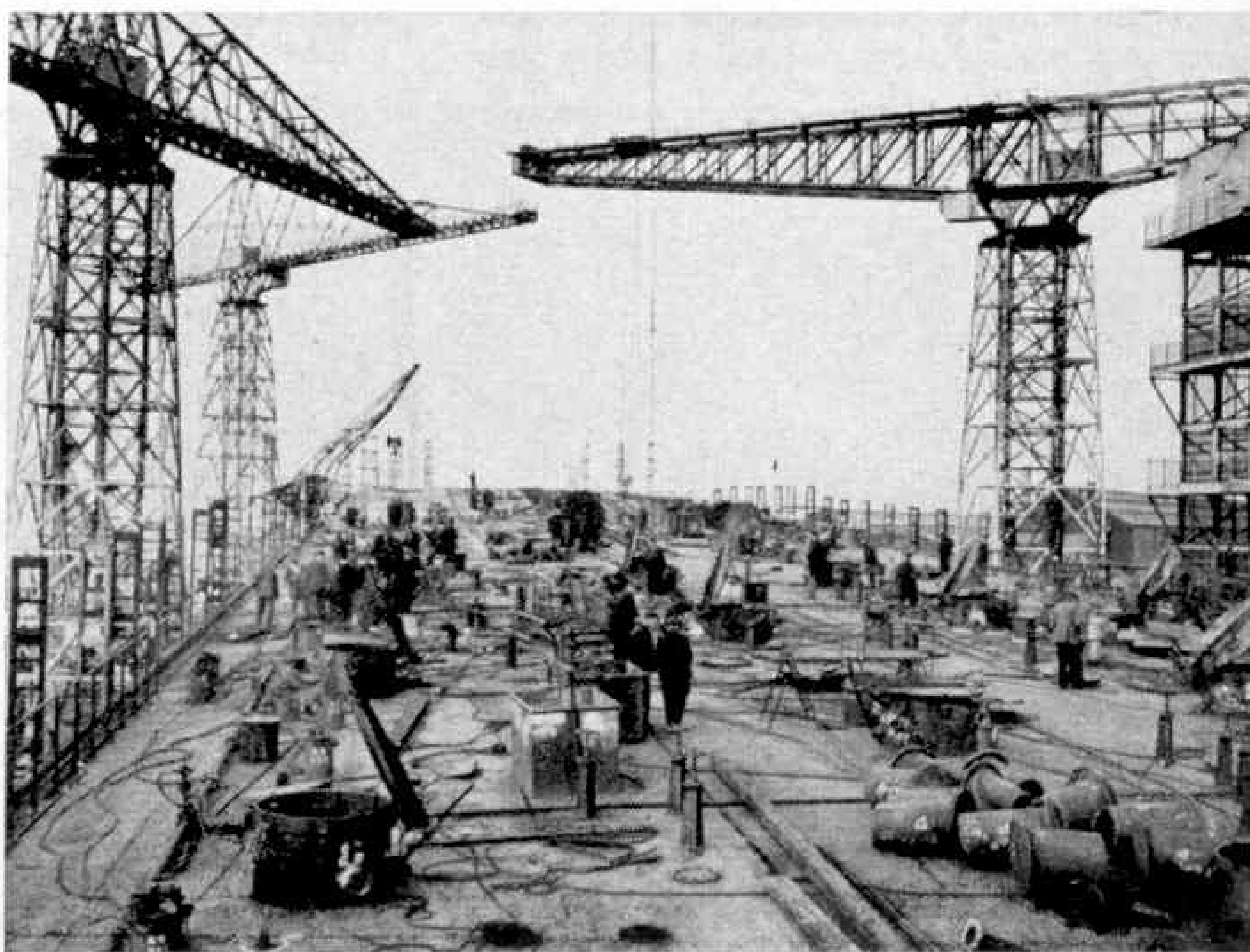
The ship's company can be thought of as divided into three departments, deck, engine and stewards respectively. In addition to a Master there are three or four navigating officers and a radio officer, and six or more engineer officers. Other members of the crew include an electrician, navigating and engineer apprentices, a chief steward, a chief cook, a boatswain, a carpenter, an engine room storekeeper and donkeyman, together with several ratings in each department, such as able seamen, firemen, stewards and catering boys, the number of these depending entirely on the size of the ship. The officers and crew of the *British Duchess* total 70.

Finally, here are a few details of the vessel that will help to give a complete picture of this fine new tanker. Her length overall is 710 ft., her breadth 95 ft. and her depth 51 ft. Her service

tankers are often called upon to carry BP personnel travelling overseas to visit trading stations or other installations of the Company.

The giant funnel, seen being swung aboard in one of my pictures, has a height at its forward end of 26 ft., while its base is 30 ft. long. It is red in colour, with a black top, below which is a green band enclosed by two narrower white bands. The shield is green and gold.

Like other BP Tanker Company ships, the *British Duchess* has white upper works, a dark grey hull and a red boot topping.



The new BP tanker during construction.

Canada's Mountain Flyers

By

John W. R. Taylor



Sideways-falling take-off of Bell 47 helicopter from a small landing ground high up a steep mountainside. Kitimat project.

FLYING in mountainous regions is no job for amateurs. Vicious up-currents of air sweeping over a crest can punch an aeroplane up a thousand feet in an instant. Down-currents can make it drop even faster, and woe betide any pilot who happens to be skimming too close to the mountainside when this happens.

Bad as such conditions are for fixed-wing aircraft, they are even more treacherous for a helicopter, and many experienced airmen predicted trouble ten years ago when a tough little Canadian named Carl Agar began venturing in a Bell 47 amid the peaks of British Columbia's Coast Range.

Up to that time, a height of around 4,500 ft. was reckoned to be the limit for a two-seat light helicopter such as the Bell. Quite apart from all the usual hazards, the air at greater altitudes was considered so "thin" that the rotor-blades would be unable to produce sufficient lift to keep the machine in the air with any degree of safety.

To prove otherwise, Agar climbed one day to 7,500 ft., using the last ounce of power from the Bell's 178 h.p. engine to reach a small promontory above a sheer 2,000 ft. cliff. Getting off again was even harder, with no forward speed to help the whirling blades build up the necessary lift. So Agar simply opened up to full power, which raised the aircraft a few feet into the air, and then slid over the edge of the precipice. Man and machine fell like a stone for 500 ft. until the blades were able to get a good "bite" into the air and Agar regained control.

Such exploits have made Carl Agar one of the world's best-known and most successful helicopter operators, but he had to start at the bottom and work his way up in more senses than one. Like many ex-R.C.A.F. pilots he opened a flying school after World War II, at Penticton in the apple-growing Okanagan valley of British Columbia. Before long he became interested in the possibilities of aerial crop-spraying, and although he had never flown a helicopter it occurred to him that this sort of aircraft would be ideal for the job. Unfortunately, even a Bell 47 cost around £14,000, to which he had to add the expense of learning to fly it, at £35 an hour.

Luck was on his side, because two local businessmen were so impressed by his enthusiasm that they raised the money, and the result, in 1947, was the start of the company now famous as Okanagan Helicopters Ltd. From the financial viewpoint, its assets at the end of that year were one helicopter and an overdraft of \$13,644; but the real strength of the company lay in the men who ran it—and who are still running it now that it operates the largest commercially-owned helicopter fleet in the world.

To Agar's flying ability and vision were added from the start the engineering skill of his old R.C.A.F. friend Alf Stringer, and the financial and legal knowledge of pilot-lawyer Glenn McPherson. Their first

jobs were hardly encouraging, because the fruit trees in the Okanagan valley are grouped in such small plots that spraying is profitable only to the farmers. One man commissioned them to treat just 33 trees, adding that they must be sure not to get a drop of spray on anything else. It would have been far easier to spray 30 acres, and Agar began searching for more worthwhile kinds of work for his helicopter.

The high cost of hiring a helicopter is justified only by jobs that can be done easily in no other way. That is why Agar became interested in mountain flying, because much of British Columbia's post-war development has centred around its mountainous regions.

Biggest development scheme of all was the vast Kitimat project of the Aluminum Company of Canada (Alcan), which aimed at building a smelting plant capable of producing more than half a million tons of aluminium a year. To get cheap power, essential for the success of the scheme, Alcan planned to reverse the natural flow of an entire river and lake system by constructing a 317 ft. high dam and

Kemano. The electrical power of more than a million h.p. generated by this power house would then be carried by overhead cable 50 miles, rising more than 5,000 ft. in one place and spanning half-mile gorges to the Kitimat works.

Without Agar's help, the whole idea might have been impossible. As it was, Kitimat and Okanagan Helicopters grew side-by-side.

One of the first jobs was to survey the cable route from Kemano to Kitimat. In a maze of rugged, forested valleys and passes, there were at least 15 possible routes and it would have taken a ground party five years to work out the best one. Using sand-bars in the rivers as landing sites, Agar and an Alcan surveyor did the work by helicopter in 20 flying hours.

Impressed, Alcan decided to ask Okanagan's help with every stage of the \$600 million project; so Agar bought six more Bells and began looking for the right kind of pilots to fly them. This was not easy, for he believes in training his own men and will not consider anyone without 1,500 hours of fixed-wing flying already in

their log-book. However, he did it, and at the height of the constructional work there were 21 camps strung out over a 150-mile long area at all heights from sea level to 7,000 ft. of which many were entirely dependent on the helicopters.

It was necessary to fly in not only the materials from which the camps were built, but often every bar of soap and scrap of food needed by the workers. At first the men themselves were not over-keen to accompany the pilots on their hops to the tiny wooden landing platforms perched in space. But by the time some 7,500 platform



The skill required in mountain flying is exemplified in this picture of a platform landing near Kemano, British Columbia. Timber was brought in by a Sikorsky S-55 to serve as a support for a power line across the valley.

diverting westward more than 350 square miles of water. To carry off the water, they proposed to bore a 10-mile tunnel, wide enough to accommodate four cars side-by-side, through the granite mountains, with a drop of half-a-mile to a power house located in an underground cavern at

landings had been made in mid-1953, without anyone getting scratched, the hard-bitten rock miners had learned to regard the little Bells as a regular bus service.

Okanagan earned such a great reputation that the demand for their services grew

rapidly. One of their most remarkable achievements was in the construction of the Palisades dam in the North Shore mountains, five miles from Vancouver. The site chosen for the dam was completely inaccessible. Even the helicopters could not land there until they had hovered

there are still many jobs that can be tackled best by the nimble Bells, and the present Okanagan fleet includes 32 of these little helicopters, plus 22 Sikorsky S-55s and one of the new S-58s. In 1957, the last year for which figures are available, they flew 22,500 hours, carrying nearly four million pounds of freight and 21,800 passengers.

Their work is no longer restricted to western Canada, for Okanagan helicopters have played a big part in building and maintaining the Mid-Canada line of radar warning posts that stretch across the country from the Pacific to the Atlantic, and have flown on exploration projects in the Yukon, Baffin Island and up into the Arctic. Smaller companies have been formed as subsidiaries or bought, and one of them, United Helicopters of St. John's, Newfoundland, links 1,300 fishing

villages nestled in coves along 900 miles of the island's coastline on behalf of the Federal Fisheries Department. Key technicians are flown from point to point for inspection purposes and to supervise the construction of new fish processing plants, with frequent air ambulance operations thrown in for good measure. And when ice floes hamper shipping, the helicopters carry passengers and freight between Belle Isle and the mainland.

Because of their unrivalled experience, Okanagan have also been responsible for giving instruction in mountain flying to many pilots of the R.C.A.F., U.S.A.F. and other air forces.

Even after 12 years, the story of Okanagan is only beginning. Experiments in the water-bombing of forest fires from its S-58 have been reported as highly-promising by the fire-fighting teams who are flown regularly to combat outbreaks in the mountains. Even more significant is the news that Okanagan have become the first company to order one of Fairey's big 48-passenger Rotodyne helicopters. There could be no better indication that the era of the helicopter airbus is nearer than our own more timid operators imply.



Reaching isolated radar outpost, Sikorsky S-55 helicopter circles before alighting in clearing, right foreground.

repeatedly a few feet over the site and dropped men with explosives and tools to blast a small flat landing area. After that, every pound of cement, every man and every piece of equipment was ferried up from sea level. The Bell's maximum load was only 450 lb., so the larger items such as generators and cement mixers had to be hauled in a piece at a time, and the pilots flew 40 round trips a day for more than a month before their work was finished.

Soon after this, a geologist hired one of the helicopters to search for oil in northern British Columbia. The expedition cost him £3,500, but he did it in two weeks, during which he spent 95 per cent. of his time on actual geological work. By comparison, in an earlier survey by mule-train, his party of two geologists, a cook, three packers, three trail cutters and 27 mules had taken eight months for the job at a cost of over £20,000 and had spent only 15 per cent. of their time surveying.

So, in this wild area, Okanagan helicopters gradually took the place of mules, roads, railways, cars, lorries, cranes and every other form of transport. As bigger types, with greater lifting capacity, became available Agar added them to his fleet; but

Space Notes

By

J. Humphries, B.Sc.(Eng.), A.M.I.Mech.E., A.F.R.Ae.S.

Speed in the Space Race

The space programme is proceeding at a far hotter pace than most space "fans", even as little as a year ago, dared to hope. Although only the Russian firings can be said to have gone according to plan, all have been first-class engineering achievements. Last year's trials with Atlas show that the U.S.A. is not so far behind Russia as a straight comparison between the Sputniks and Vanguard seemed to indicate.

By the end of 1958 Atlas had completed 15 missions, including a full-range flight of 6,325 miles, and on 18th December an Atlas launched an 8,700 lb. satellite into a 20-day orbit. This is the first phase of Project Discoverer, the final aim of which is to launch a man-carrying satellite of 10,000 lb. weight. This is still a long way from a man-carrying Moon-rocket, but the Soviet authorities have announced their intention of landing men on Mars and Venus as well as the Moon, and so it is not too early to take a look at the prospects awaiting the first Moon explorers.

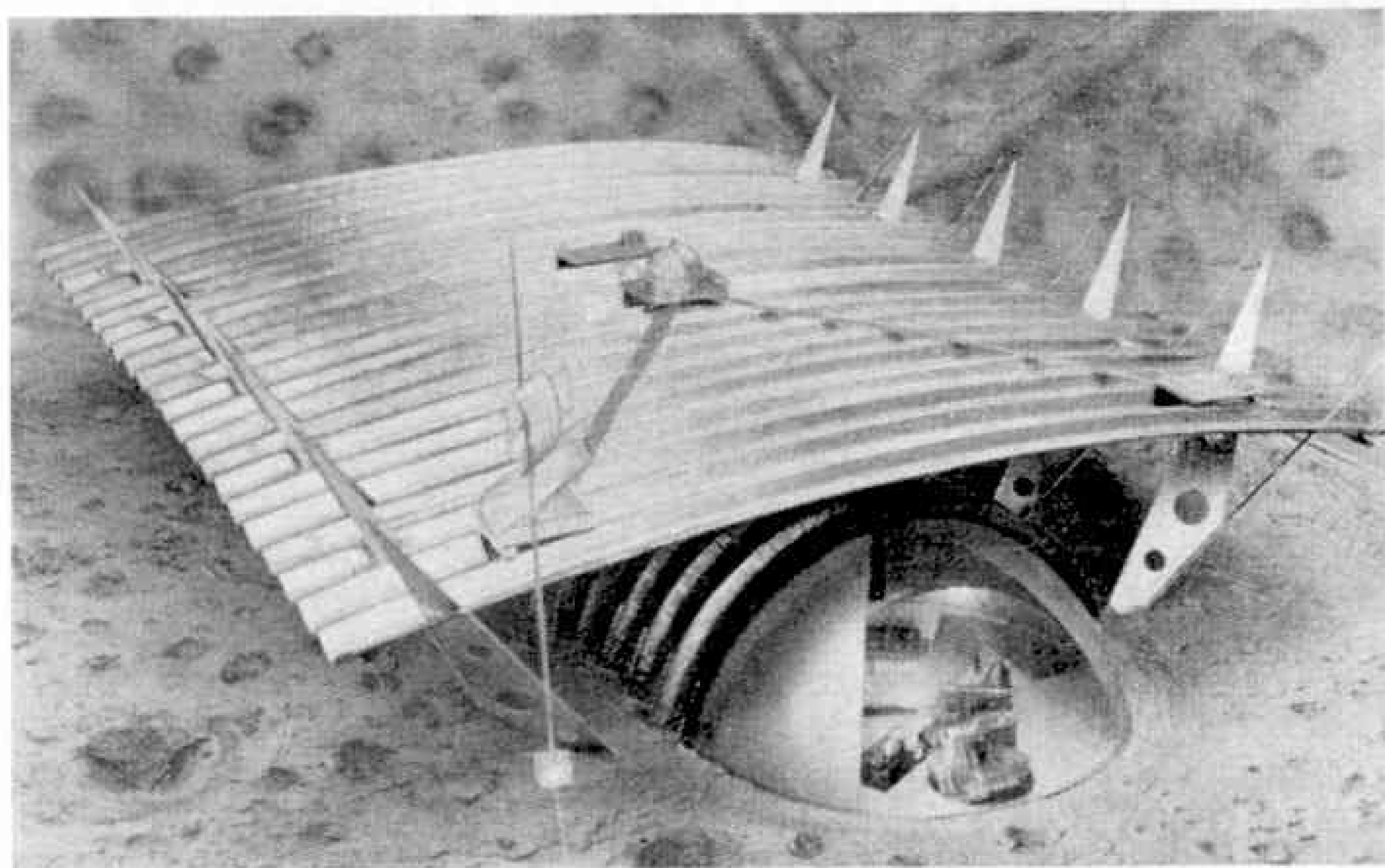
The Moon

Although we know more about the surface of the Moon than about that of any other astronomical body, there still exist many problems to which scientists would very much like to know the answers. As the Moon now turns once in the same time as she takes to go round the Earth, the same face is always pointed towards us and so we can only see about half the surface.

The part we can see consists of large plains called "seas", although to the best of our knowledge there is not a drop of water on the Moon, and tall, steep mountains. The whole surface is pitted with large circular, walled pits known as craters, in all sizes from that of Bailly, 170 miles in diameter, down to the limit of our telescopes, and there is scarcely a half-mile that is not marked with a half-dozen.

Living on the Moon

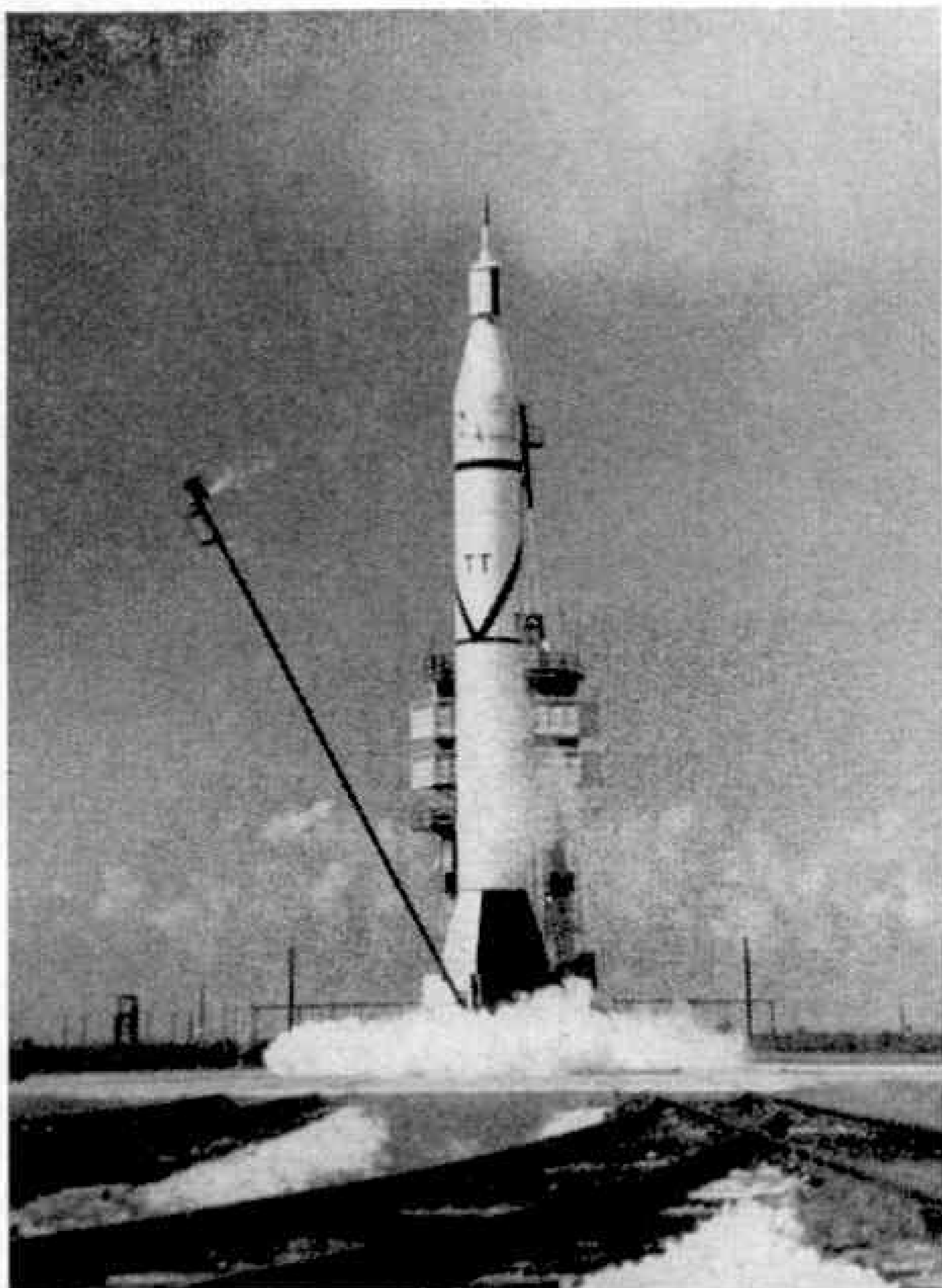
The first problem to be faced by Man on the Moon is the lack of any appreciable



Scale model of a Moon building designed as a permanent structure with living quarters for Moon explorers and laboratories for scientific research. Photograph by courtesy of The Wonder Building Corporation of America.

atmosphere. We can't as yet say "no atmosphere", as there may be the merest trace, but we do know that its density at the Moon's surface is less than one ten-thousandth of that of Earth at sea-level. Supplying a space-suit and oxygen is not so difficult a problem—modern high-altitude flying suits are virtually space-suits—but many other serious difficulties arise due to the lack of atmosphere.

The most severe of these is the effect on surface temperature. On Earth the atmosphere acts as a "buffer" storing up heat during the day and releasing it at night,

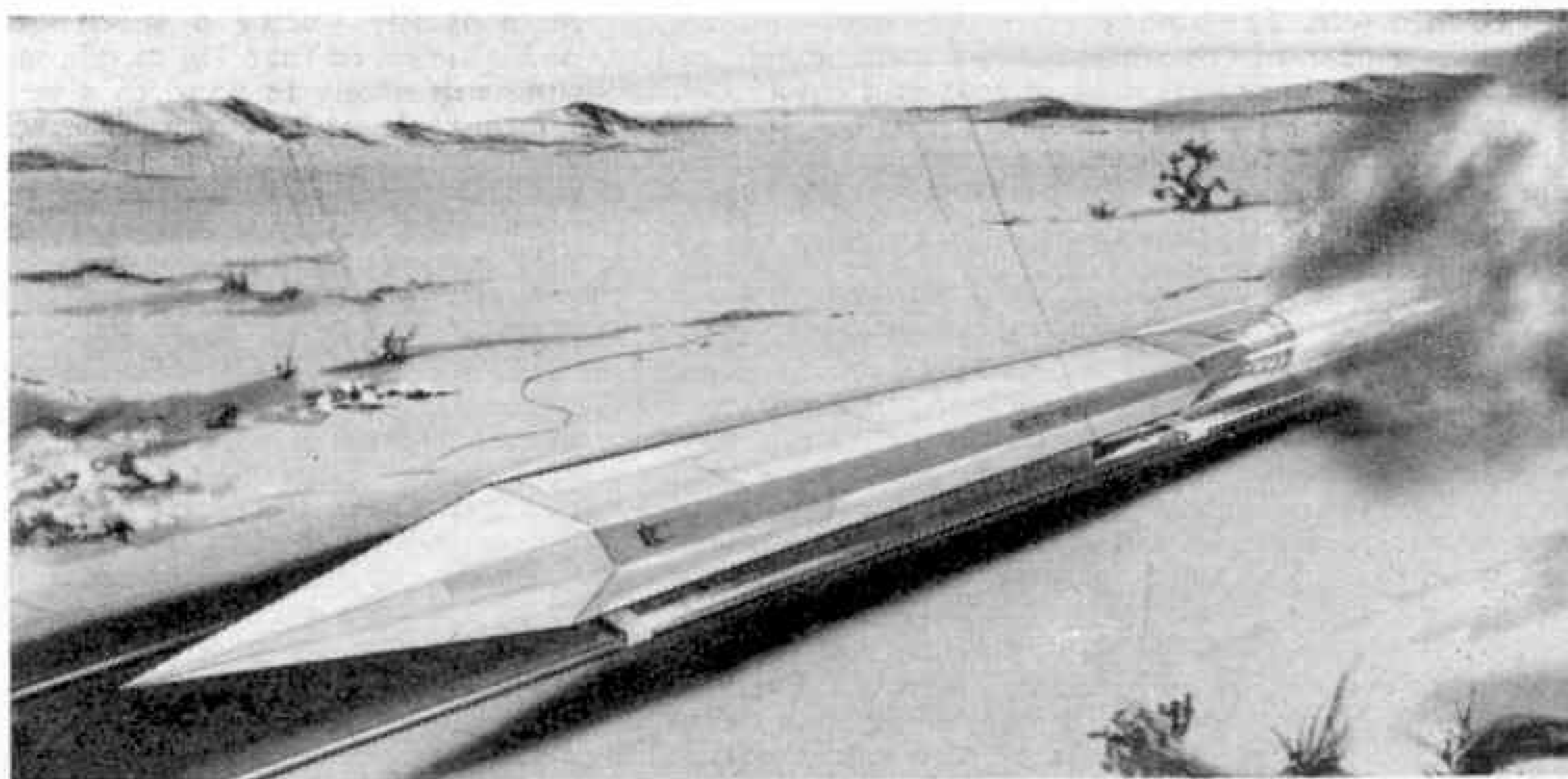


Explorer IV takes off. It is still in orbit and latest calculations give its life as six years. Photograph by courtesy of the U.S. Army.

thus maintaining a fairly steady temperature throughout the 24 hours. The surface temperature of the Moon is about + 210 deg. F. at lunar midday, 32 deg. F. at sunset and - 240 deg. F. at midnight. The surface cools very quickly at sunset, falling almost to its minimum in half an hour. It will be possible to withstand such extremes for short periods only in space suits, and some form of base will be essential for all but the shortest visits.

The Wonder Building Corporation of America have recently produced a design for a building to

An artist's impression of the RS-2 rocket sled at speed—it will travel faster than a bullet from a low-power rifle. Photograph by courtesy of Rocketdyne.

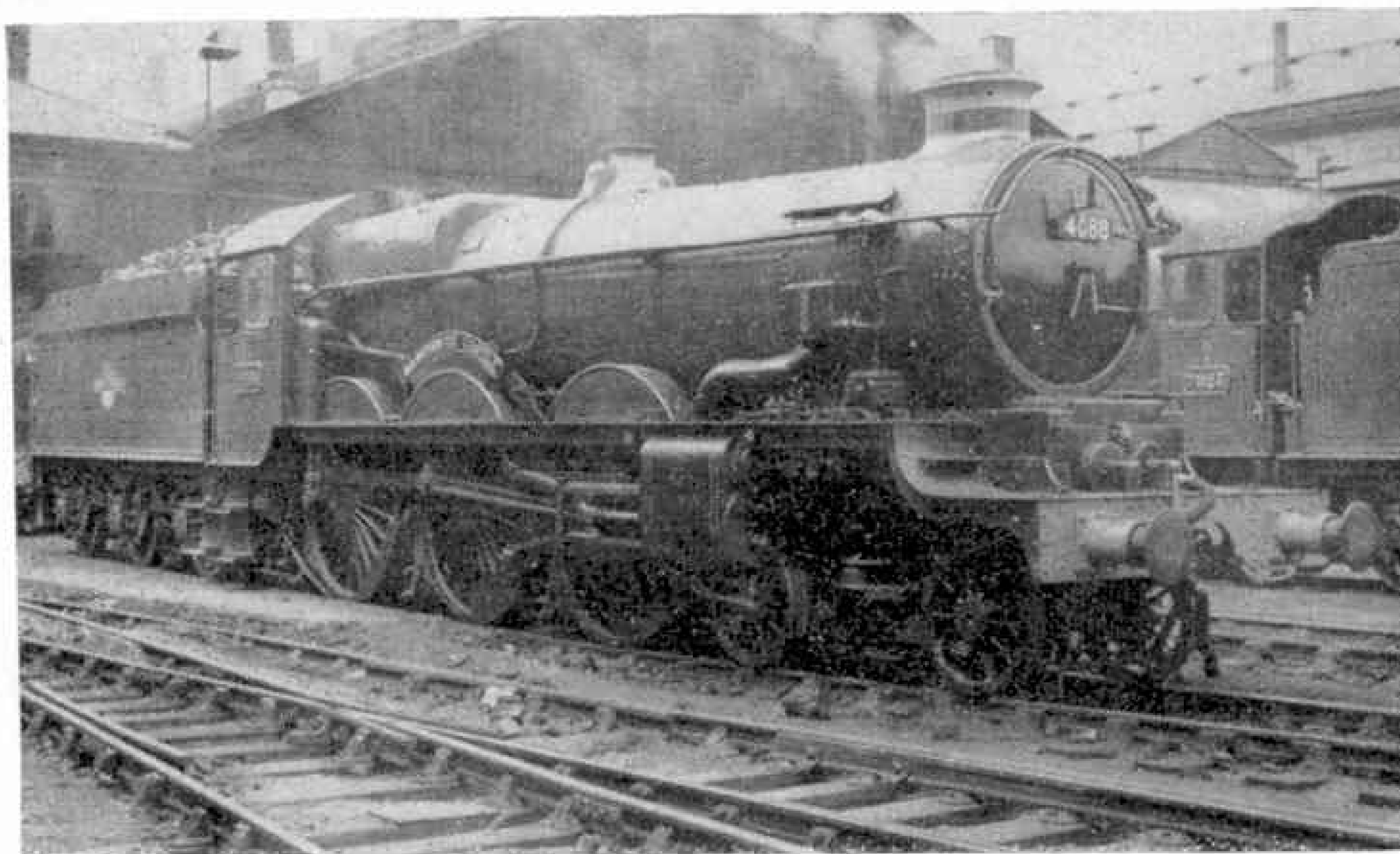


provide such a base. One of the big unknowns in attempting such a design is the state of the surface. It had long been thought that all the surface was hard rock covered with a thin coating of dust, perhaps up to an inch in depth. This is still the view of most astronomers, but it has been suggested in recent years that a very great deal of dust has been formed by the action of the Sun's rays on the rocks and this has flowed down into the plains, making the so-called "seas" literally seas of dust. This would act just like a liquid and any unwary ship landing would be swallowed up for ever.

Building in such circumstances would be difficult and the design, shown in the picture on the opposite page, is for a building to float in one of these dust seas. The lower gravity on the Moon, which is only 1/6th of that on Earth, enables much lighter structures to be used and there are no wind loads to be taken into account. Meteors can penetrate to ground level and so a meteor "bumper" or covering is provided to protect the building. This bumper will vaporise small meteors; large meteors are so very rare that they can be discounted.

A New Rocket Sled

Rocket-driven sleds have been in use for many years testing aircraft and missile components, ejector seats and even human beings. The latest and biggest now being built is the North American RS-2, a sleek aluminium vehicle, 43 ft. long and 40 in. high, that weighs seven tons. It will ride along its seven-mile track on four steel slippers. A rocket using liquid propellents at the rate of 5,000 gallons a minute will give a top speed of 1,700 m.p.h.



No. 408
"Dartmouth
Castle" fitted
with double
chimney and
special lubricator.
Photograph by
F. M. Gates.

Railway Notes

By R. A. H. Weight

Aboard the "Bristolian"

Renewing travelling acquaintance with one of the fastest steam trains in the world, I logged a grand run to London behind No. 5067 *St. Fagans Castle*. This locomotive, stationed and manned at Bristol (Bath Road), was in fine trim, though not displaying any recent modernisation feature such as a double chimney. The usual smart formation in mid-week of 7 coaches weighed about 265 tons, including a considerable passenger complement.

Getting away from Temple Meads punctually at 4.30 and taking the Filton route, 36 m.p.h. was sustained up the initial sharp climb through Bristol suburbs past Horfield. Then, having joined the South Wales main line, after a maximum of 68, a steady 62 m.p.h. was maintained as the summit of the 10-mile gradual rise at 1 in 330 was gained at Badminton, 17½ miles in 22 min. Now we had 100 miles to go over a beautifully aligned course with scarcely an adverse gradient, and only 83 min. left. The high speed stretch was beginning, so it was a case of concentration on stop watch and rail joints with very experienced eyes and ears!

Within 10 miles gently downhill the *Castle* 4-6-0 accelerated to 91 m.p.h., easing to 70 for the well-laid junction on to the older tracks of the Bath line at Wootton Bassett. Through Swindon, gliding over the numerous lines and junctions, we made 40½ miles in 40½ min., and thence for 50 miles past Didcot, Reading and Maidenhead, the *Bristolian* was doing 80-88 m.p.h. almost continuously. There was an easing near Slough, where track repairs were to be started. Otherwise there was no delay whatever, since good operating work gave us clear signals throughout, and we ran into Paddington 3 min. early at 6.12 p.m.! This is a busy evening period, and many trains were passed on main and local lines in both directions as we neared London.

The overall average speed was 69 m.p.h., and one stretch of 94 miles was covered in 73 min. It was an exciting but most comfortable trip, typical of many fine performances on this express and other British ones by grand locomotives not necessarily young.

More Good Western Runs

The timing applied last summer to the 1.50 Bristol-Paddington express, via Bath, requiring an average of over 60 m.p.h. from the last stop at Chippenham, was improved upon by a double-chimney *Castle*, No. 5043 *Earl of Mount Edgcumbe*. The start was 2 min. late, and about 5 min. were lost by permanent way and signal slacks, but arrival in London was punctual at 4 p.m. The 94 miles from Chippenham were covered in just over 90 min. actually, or about 85 min. nett. East of Swindon 80 m.p.h. was averaged for well over 25 miles, with long stretches on almost level track at a sustained 82. Reading had to be passed cautiously on the platform loop, a slip coach being detached reducing the load from 9 to 8 coaches.

With a heavier 10-coach formation, say 355 tons, No. 7001 *Sir James Milne*, working the 4.15 Gloucester-Paddington train, gained time between stops, running from Swindon to Reading, 41½ miles in 41½ min. This included two signal delays and maximum speeds of 81 and 77 m.p.h. Thenceforward to the terminus, 36 miles in 38½ min., the train arrived before the booked time.

Making a non-stop run from Newport (Mon.) with the up *South Wales Pullman*, consisting of 8 cars weighing about 330 tons gross, No. 5051 *Earl Bathurst* made a fast start to the Severn Tunnel and through it, with its sharp changes of gradient and consequent speeds. The train climbed well out of the tunnel depths through the cuttings and the much shorter Patchway Tunnel, despite heavy rain that caused wheels to slip momentarily during a sudden thunderstorm. With no higher speed than 72½ m.p.h. and two severe slowings, time was nicely in hand to give a Paddington arrival 1 min. early at 8.44 p.m. The schedule shared by the *Pembroke Coast Express* 1-hr. ahead, allows 145 min. for the 133½ miles, including margin for recovering delay, and is the quickest for that journey. This Pullman express also serves Swansea, Neath, Port Talbot, Bridgend, Cardiff, each way from Mondays to Fridays.

In the opposite direction along the Swindon-Bath route the 1.15 p.m. from Paddington has a very fast timing to Bath Spa, the first stop, and reaches Bristol in 2 hrs. With "7-on" No. 5073 *Blenheim*, after signal checks in the pretty Thames-side country around Goring, was pulled up for one min. 46½ miles out from London. As the passing times require an average of 67 m.p.h. between Reading and Chippenham, a 5 min. loss was a serious matter. But in the ensuing recovery effort 72 m.p.h. was actually averaged from passing Didcot to arriving at Bath, a little over 1 min. late, 107 miles being covered in few seconds more than 100 min. overall.

A larger modernised King, No. 6018 *King Henry VI*, on the 11.15 down *Merchant Venturer* was approaching Reading at 75 m.p.h. when a rash passenger, discovering that he was in the wrong train, pulled the communication cord and caused an emergency stop, though beyond the station! From the restart a similarly fine performance to the foregoing over a 10-mile longer course, and again with maximum speed about 90 down the short 1 in 100 Dauntsey descent, brought the express into Bath before time in a total of 103½ min., notwithstanding the delay. The timetable allows 7 min. more than to the 1.15; even so it is a mile-a-minute overall schedule.

The last four runs were logged by my friend, Mr. D. S. M. Barrie, M.B.E., who kindly supplied details.

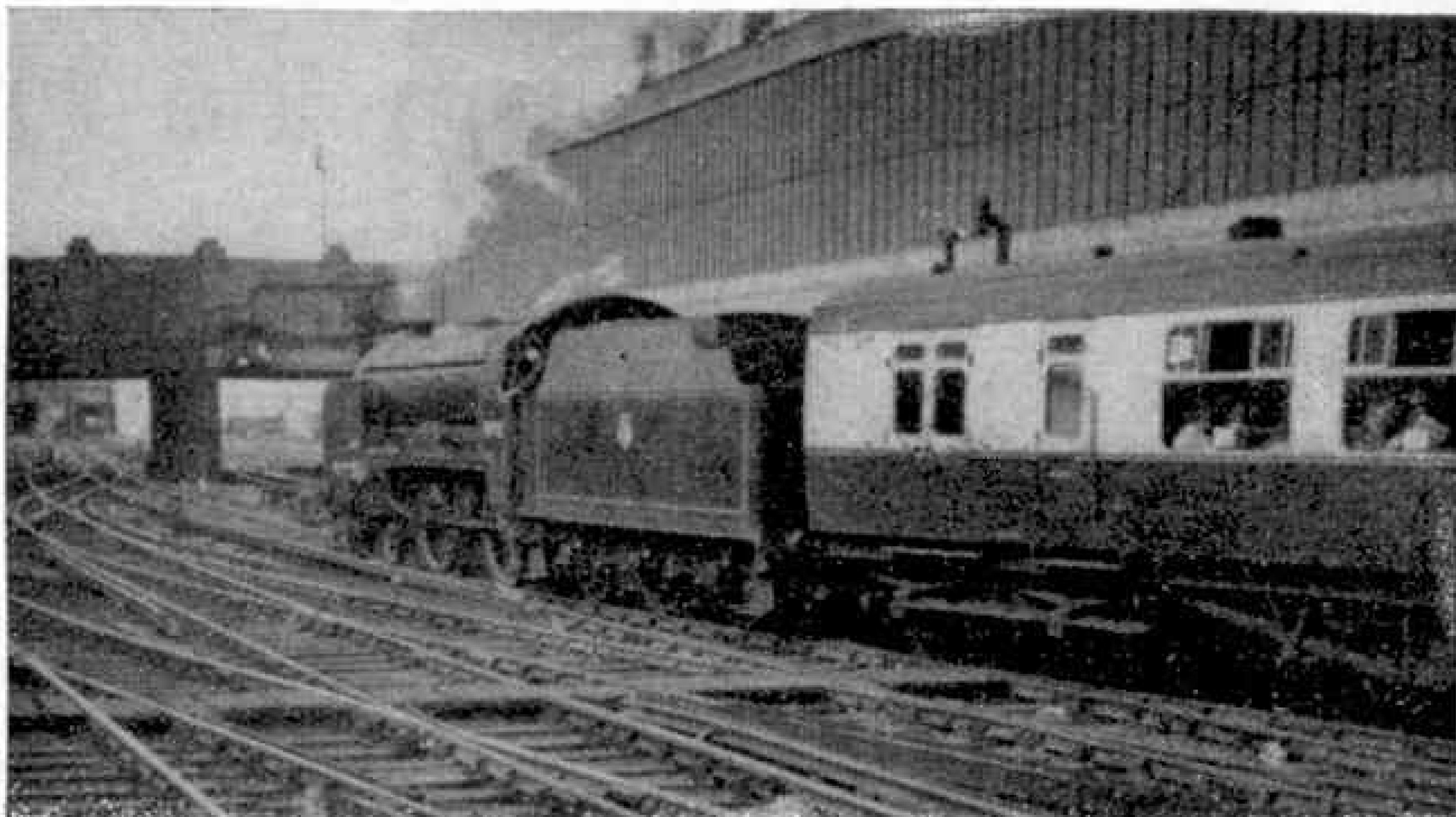
Progress Reports

As part of the vast modernisation and new construction programme in hand, attractive new stations have been completed at Banbury and Barrow-in-Furness. Oxford Road, Manchester, is being rebuilt with provision for 25 kV. a.c. overhead electric traction to be introduced over a wide area of the Western Division, L.M.R., together with considerable alteration of stations and tracks. Among new combined signal boxes featuring latest electrical mechanism or other equipment are those at Huddersfield and at Groombridge, Sussex, controlling triangular junctions hitherto needing several cabins.

A modern goods station has been opened at Lincoln. One of the quickest-ever express freight trains is running between London and Glasgow in about 11 hrs., giving next-day delivery, after trials with twin diesel units and other motive power. It is named *Condor*, indicating that traffic in containers is conveyed intact from door to door.

Locomotive Stock Changes

Additions recently included the following: steam class 9 2-10-0 Nos. 92200-2, to 36A, Doncaster Shed; Nos. 92248-9, 86A, Newport (Mon.); 92250, 84C, Banbury.



S.R. No. 30932 "Blundells" leaving Victoria with a Dover boat train. The modified tender shown is not now running with this engine. Photograph by David Sellman.

Diesel-hydraulic: A1A-A1A express, No. D604 *Cossack*; No. D6300 B-B 1,000 h.p. mixed traffic; for shunting in the Scottish Region, Nos. D2738-41.

Diesel-mechanical shunting: Nos. D2416-8, 61A, *Kittybrewster*; Nos. D2579-81, 62A, *Thornton*, Fife; No. D2034, 32A, *Norwich*; and Nos. D2045-50, in the 52-, *Newcastle* district.

Diesel-electric: Mixed traffic, Bo-Bo 1,160 h.p. Nos. D5002-4, 5B, *Crewe South*; and Nos. D5305-13 and upward, 34B, *Hornsey*. Co-Bo 1,200 h.p. Nos. D5705-7, 17A, *Derby*. For shunting: Nos. D3563-4, 67C, *Ayr*; Nos. D3565-7, 12A, *Carlisle*; Nos. D3588-91, 26A, *Newton Heath*, Manchester; Nos. D3604-7, 81A, *Old Oak*, London, W.R.; Nos. D3641-9, 36A, *Doncaster*; and Nos. D3803-6, 82B, *Bristol*, St. Philip's Marsh.

Three unrebuilt Patriot L.M.R. 4-6-0s: Nos. 45505 *Royal Signals*, 45506 *The Royal Pioneer Corps* and 45519, *Lady Godiva*, lately moved to 82E, Barrow Road Depot, Bristol (formerly Midland), for main line duties to Derby, etc.

More S.R. light Pacifics rebuilt include: Nos. 34029, *Lundy*; 34031, *Torrington*; 34039, *Boscastle*; 34042, *Dorchester*; and 34053, *Sir Keith Park*. Modified tenders are attached to a number of these engines and various shed changes are taking place.

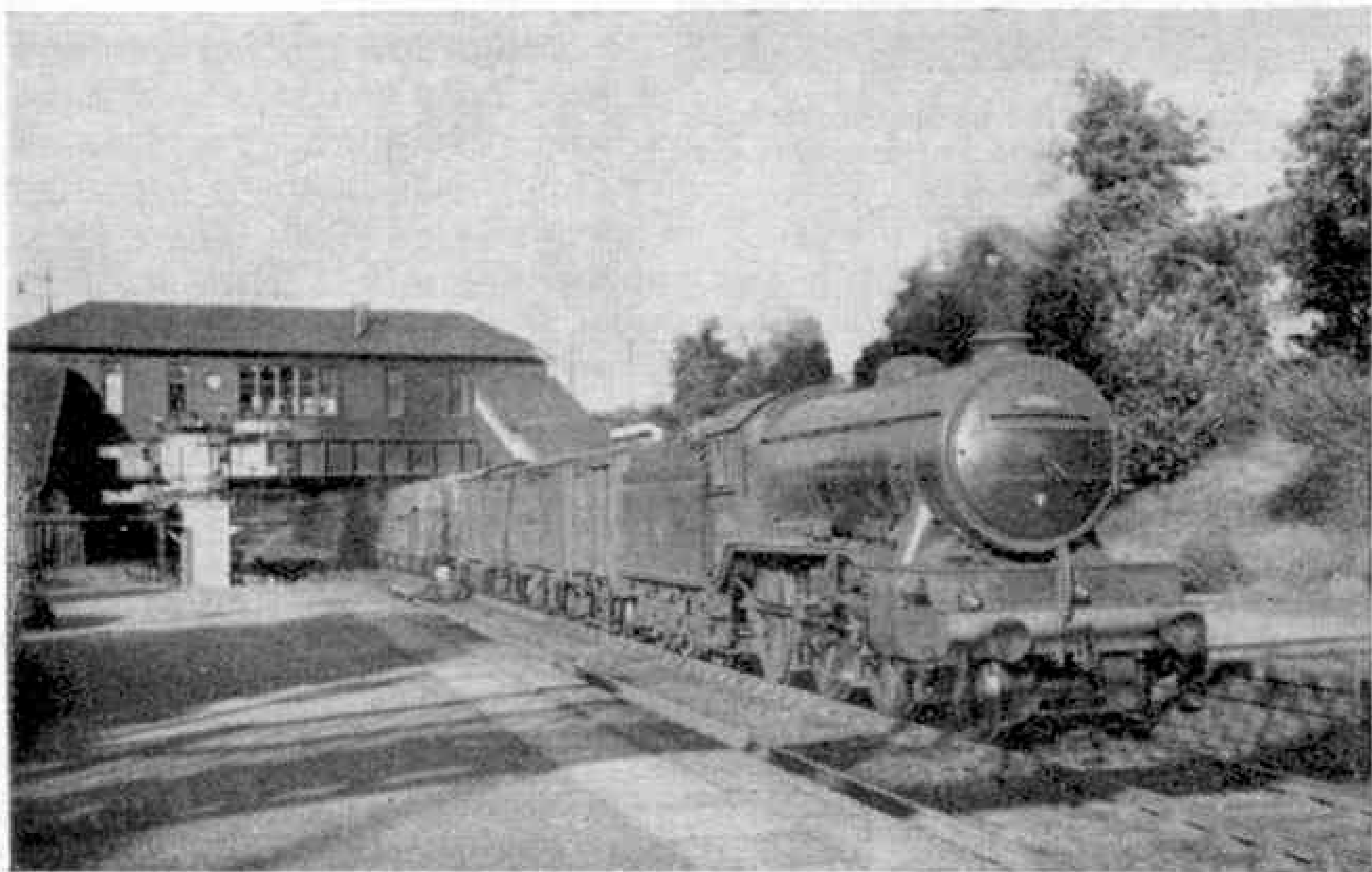
As Brighton Works are no longer used for locomotive or similar railway purposes, the familiar yellow "Terrier", specially painted Works shunting 0-6-0T locomotive, is being returned to traffic stock as No. 32635. It began work in 1878 as L.B.S.C.R. No. 35 *Morden*.

N.E.R. G5 0-4-4T class, once numbering 110 examples, is extinct.

Long Welded Rails for Smoother Riding

Those of us experienced in the art of logging speeds by counting rail joints in conjunction with stopwatch readings will miss the "click", or in other words the wheel rhythm characteristic of the standard 60 ft. lengths on sections of main line that are now being increasingly relaid with long welded rails. These may be continuous for a ½-mile or more, resulting in steadier and quieter travel.

New rail welding depots are being established in various parts of Britain.



Express freight for the South, Buchanan St. to St. Pancras, passing Strathbungo behind K3 2-6-0 No. 61986. Photograph by G. H. Robin.

S-O-S Calls from the Mountains

How Mountain Rescue Services Work

By Arthur Nettleton

MOUNTAINEERING and rock climbing are popular pastimes today, for pitting one's skill against Nature has a strong appeal. Every weekend, indeed, scores of parties set out to scale the mountains of Britain or to conquer cliff faces and rocks, and at holiday times many more indulge in this invigorating pursuit.

If approached sensibly, this is less

mountaineering is far from new, for it was begun more than twenty years ago when the development of modern mountaineering was just beginning.

Today there are some forty stations in England and Wales where rescue teams can be mustered when a call for help arrives. Nearly all these points are places where walkers and climbers gather, such as mountain hotels and Youth Hostels.

Some stations are small, and merely house a quantity of easily-carried rescue equipment. Others are equipped with the latest devices for search parties and ambulance teams, including walkie-talkie apparatus as well as stretchers, medical kits, ropes, ice-axes, blankets, small tents, thermos flasks, and cooking utensils.

The stations are in the care of an experienced but unpaid man—a local climber, hostel warden, local doctor, or hotelier—who can be relied upon to organise and direct rescue work whenever a man is lost or injured on a mountain.

Mountain rescues demand not only careful planning and the minimum loss of time, but also a detailed knowledge of the local

conditions and terrain. Haphazardly approaching the job is likely to lead the rescuers into difficulties themselves, and only by having the operation controlled by somebody aware of the local problem is it likely to succeed.

The mountainous areas of Britain are quite wide enough for an injured person to go undiscovered for days, even when a full-scale search is made. Even the biggest search cannot explore all the gullies and ravines where a climber may have fallen, and the thick mists which shroud our mountains often greatly handicap the most thorough rescue operation.



An R.A.F. mountain rescue team in Cyprus is briefed by its leader after going as far as possible by road towards the area where an aeroplane has been forced down in mountainous country.

dangerous than many non-climbers assume, but like most other sports it has its hazards. Inexperience, bad luck, or plain foolhardiness cause accidents. Sudden mists envelop the heights and walkers become lost. Climbers slip and sustain injuries that incapacitate them.

These are the times when the Mountain Rescue Organisation swings swiftly into operation. It has been likened to the life-boat service for seamen—a round-the-clock voluntary organisation for those in distress, though it operates on land and not at sea. In reality, the idea of establishing an S-O-S service for

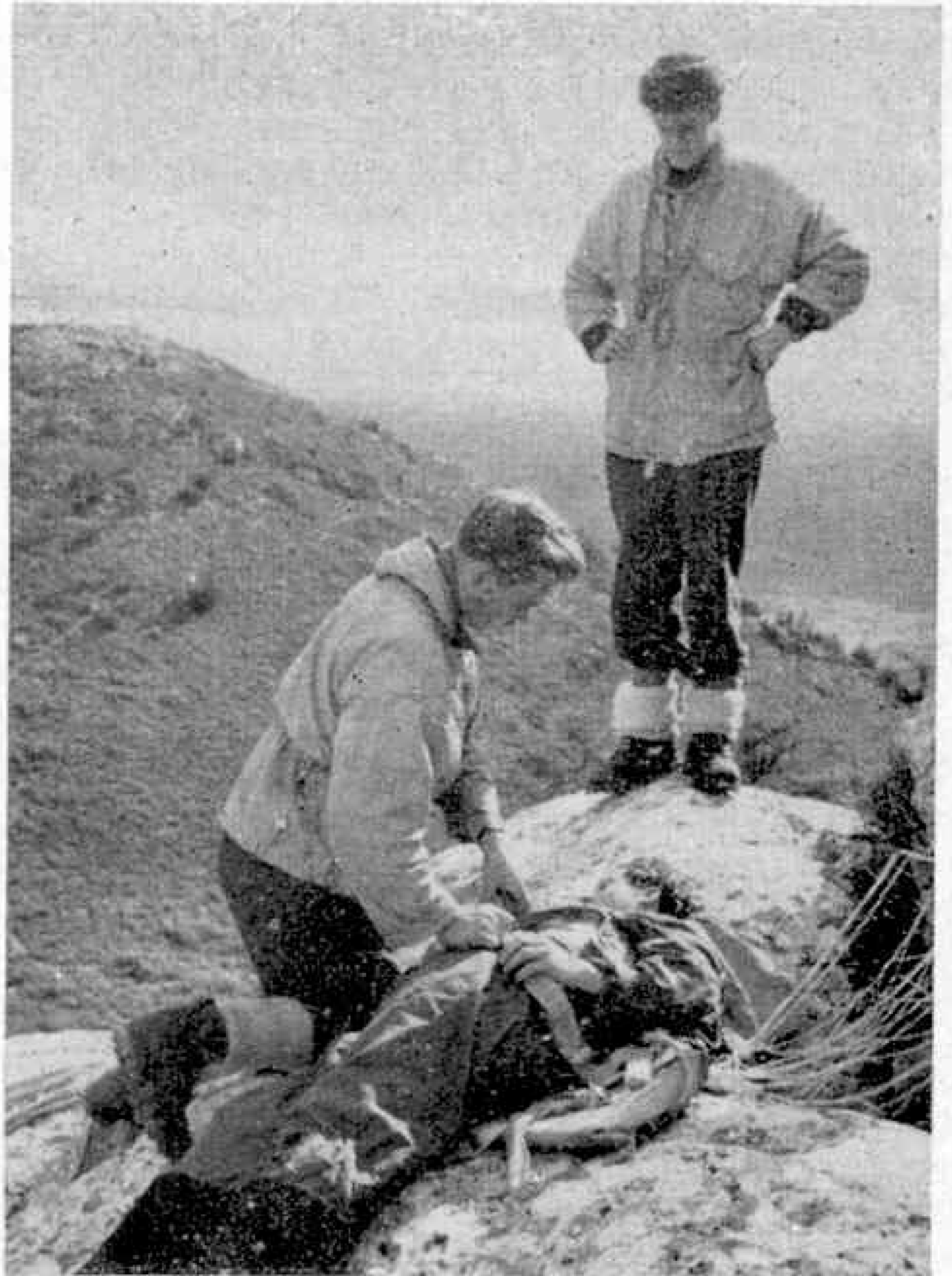
That's why the mountaineering clubs advise all climbers to say where they are going when they set out. Then if a mishap arises the search parties can concentrate on the area where help is needed. All climbers should carry a whistle, too, so that they can make their position known even in a dense mist.

The total number of rescue operations carried out since the organisation was founded is unknown, but one leader of such activities alone has led more than 100 search and rescue parties in the Welsh mountains. In Snowdonia, S-O-S messages come to one or another of the stations practically every week—sometimes three or four during a single weekend in summer, when many inexperienced holidaymakers attempt to conquer the heights without proper equipment or suitable clothing.

When a call for assistance is received, the police are notified, since they are technically responsible for mountain rescue operations. But in practice they leave the actual job to the voluntary rescue organisation, which is best qualified to deal with it.

R.A.F. Mountain Rescue may also be asked to help. There are several R.A.F. rescue units up and down Britain, and though they have been formed primarily to rescue crashed air crews, the teams have often taken part in searches for climbers.

Membership of the units is voluntary, but the men are all enthusiasts. They

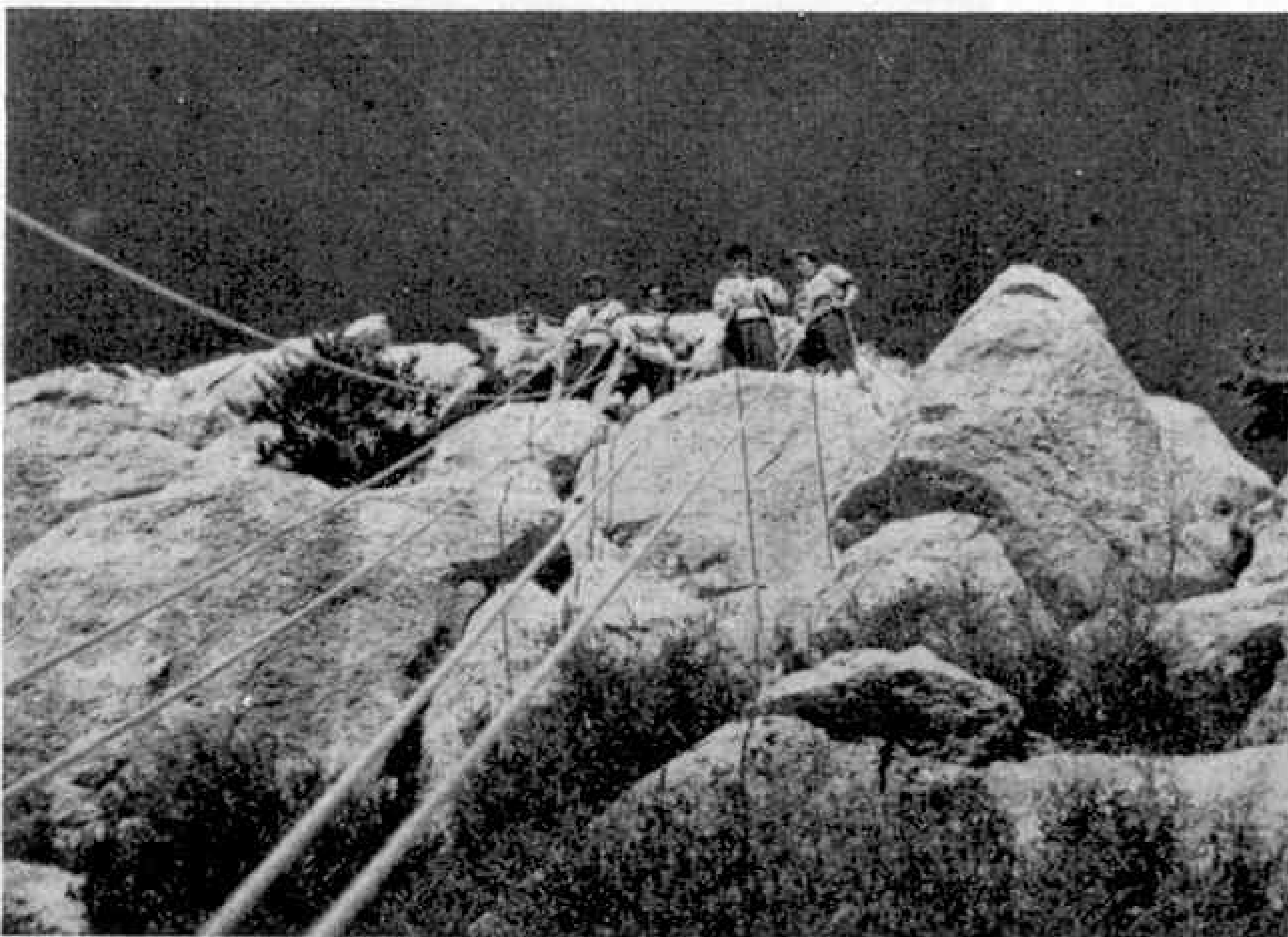


The pilot of the wrecked aeroplane is found. His parachute harness is unbuckled, his clothes are loosened and first aid is administered.

carry out practice rescues in their spare time as well as answering emergency calls.

Exercises are held most weekends, and R.A.F. teams have sometimes given up their Christmas leave for this purpose. They have spent Yuletide under canvas on the Lakeland mountains and other elevated places, and their way of having a Merry Christmas has been to tramp across bleak moorland, scramble up scree, and climb rock faces.

The R.A.F. rescue units are more fully equipped and more mobile than the civilian rescue teams, and are able to cover a wider area. The Topcliffe (Yorkshire) Unit, for instance, has an operational range extending from the



After being strapped to a stretcher, the pilot is manoeuvred down the sheer cliff face.

Cheviots in the north-east to the most inhospitable peaks of Lakeland. Between these mountainous regions are the Pennines.

The teams are able to reach the neighbourhood of an S-O-S call quickly in lorries carrying heavy rescue gear and short-wave radio equipment. Land Rovers are used to enable them to get far up the mountains before foot-slogging becomes necessary.

Accompanying the team as far as possible is a small but sturdy ambulance that can become a miniature but efficient operating theatre, and which includes a blood transfusion unit.

It's a tough job, and discipline is strict, despite the voluntary nature of the work. Its importance has been recognised by the Queen, for not so very long ago she approved a special badge for these Mountain Rescue Units—two crossed ice-axes on a rope coil.

The badge is one of the most exclusive in the Services. Only about 200 men are entitled to wear it. They are trained in first-aid, as well as being keen mountaineers and rock climbers, and have to be as physically fit as Commandos.

Exercises include lowering "casualties" down sheer rock faces and carrying "injured" men across miles of difficult country. Special stretchers are used, these being fitted with runners, but it is still a task requiring great stamina and the highest degree of physical fitness.

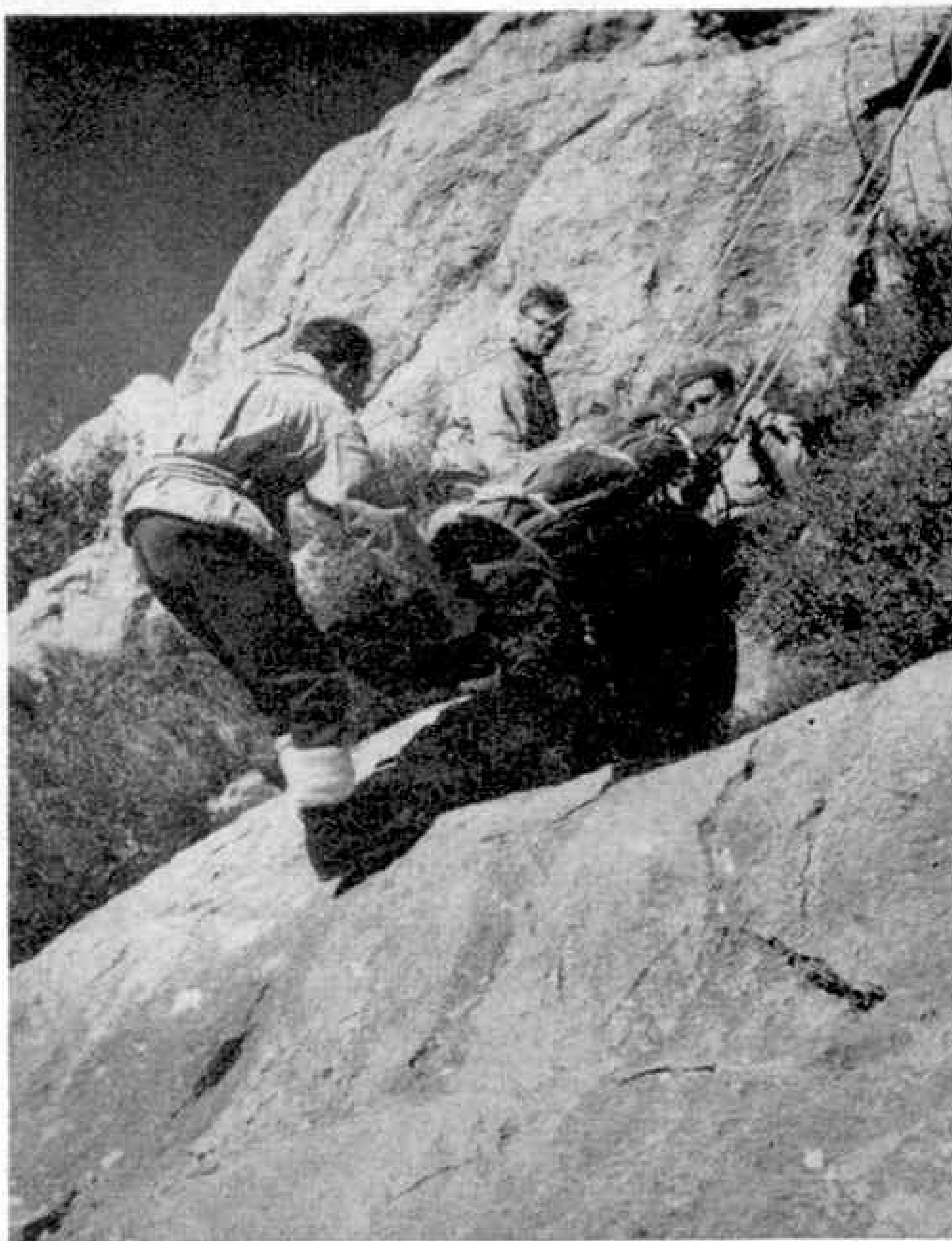
On rescue missions, whether seeking crashed fliers or climbers who have become injured or lost, the R.A.F. groups usually split up into teams of three. One man leads with map and compass, another carries the walkie-talkie equipment, and the third has charge of the first-aid equipment.

The radio apparatus is useful not only for co-ordinating the search and enabling the area to be combed methodically, but also sometimes for calling off the search. The "lost" mountaineers may turn up, unaided, and in any event the team that finds them must notify the other search parties that the quest is ended.

Civilian rescue teams are usually enlisted from mountaineers who happen to be at the station when an S-O-S is received, rather than from official teams. There are nearly always a number of climbers and others at hand, and a call for help never goes unanswered.

Before the different teams are sent out, as much information as possible about the plans of the missing climbers or walkers is collected, so that some idea of the best way to organise the search may be obtained. The quest for the missing persons is not conducted in a random fashion, but it is a planned operation.

The time taken in thus organizing the



The strain of lowering a stretcher down the rock face is taken by the lowering party. The illustrations to this article are from British Official Photographs (Air Ministry). Crown Copyright reserved.

search is saved on the actual job. A preliminary survey, so far from jeopardising a life by wasting time, may save one, since it shows the best way of combing the area.

If you're just taking up mountaineering or rock-climbing, the men who so unselfishly run the rescue services have some tips for your safety. They advise you to take an experienced mountaineer or climber with you and follow his instruction implicitly. See that you are properly equipped with nailed boots, and if snow is at all likely to be encountered you should carry an ice-axe. And always let somebody at the base know where you are going. If you get into difficulties the Mountain Rescue Organisation will then know roughly the area on which they must concentrate.

From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

Climbing Mount Edith Cavell

Last summer I went mountain climbing in the Canadian Rockies in Jasper National Park, Alberta, with my father and an Austrian guide. We spent four days there, using the first to hike around Mount Edith Cavell so as to reach the less steep southern approach to it. There we pitched our camp at tiny Buttress Lake, 6,500 feet high, in a picturesque mountain valley.

We did not climb Mount Edith Cavell until two days later. It is 11,033 feet high and the highest peak in the Park. The first stage of the climb was to the col or saddle between Mount Cavell and Mount Sorro, along which we walked for an hour or so. The col got steeper as we climbed and the clouds and snow closed in on us. In the bitter cold we rested in a small, plastic bivouac shelter before attempting the final 500 feet. This was so steep and slippery that we had to rope our way up. I was feeling rather miserable and slipped many times, but thanks to the rope I reached the top, from where it was just a minute's climb on a gentle slope to the final peak.

The climb took 6½ hours from our base camp. The descent was quick and uneventful. I wish everyone could enjoy



Brian Mossop, Toronto, and a guide on the peak of Mt. Edith Cavell, 11,033 ft. high.

such a thrilling once-in-a-lifetime experience.

B. R. MOSSOP (Toronto, Canada)

A Derbyshire Beacon

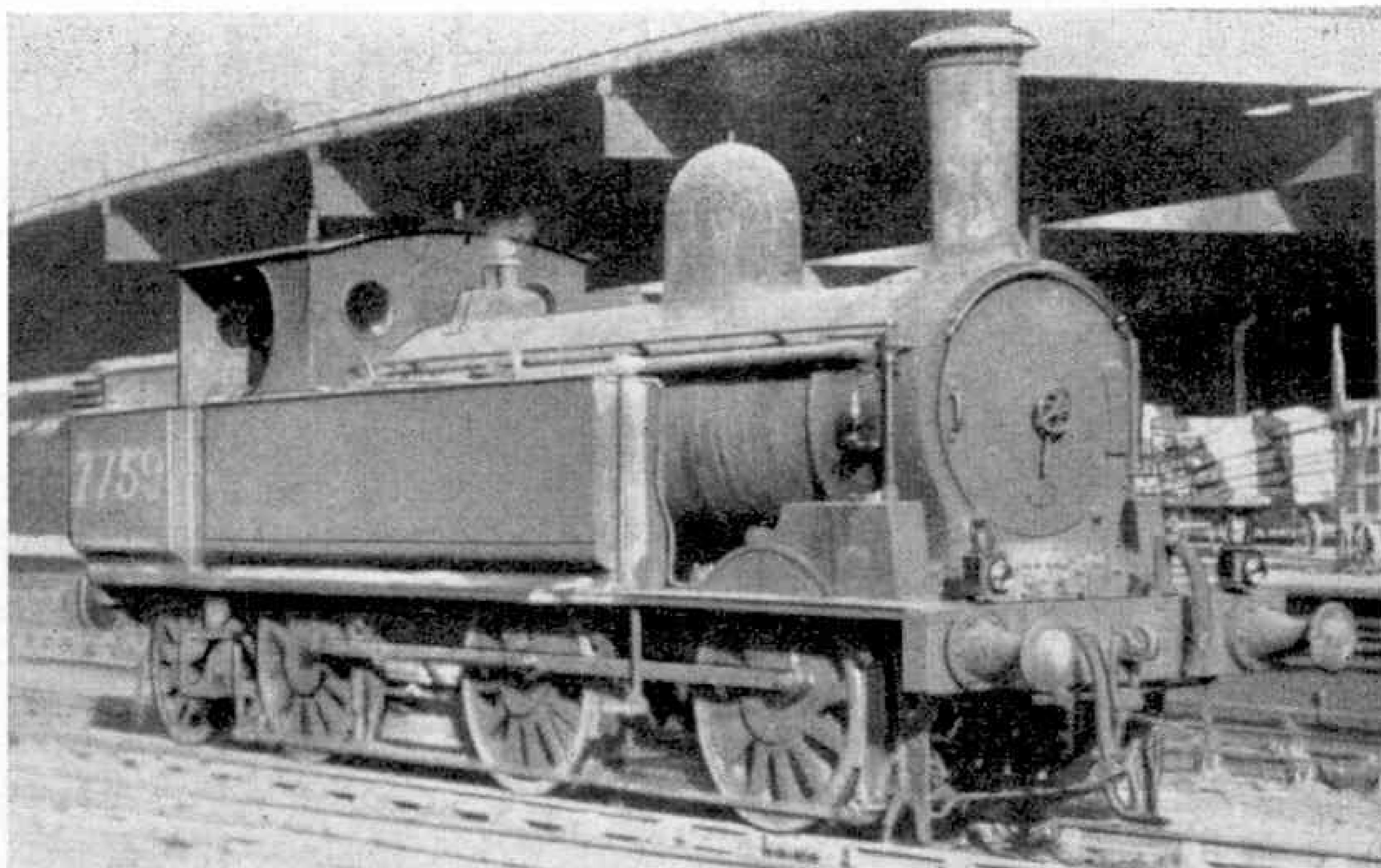
On one of the highest points in Derbyshire, at Crich, near Matlock, stands a memorial to the Sherwood Foresters who fell in the Great World Wars. It is like an inland lighthouse and its flashing beacon can be seen for many miles. It is said that on a clear day one can see into seven counties from its dome. In July an annual pilgrimage is made in memory of those who died in battle. The present tower was built in 1922 to replace the old one, which had to be demolished when quarry working made it unsafe. The quarry has recently been closed down.

M. TOMLINSON

(Whatstandwell)



A Derbyshire memorial, photographed by M. Tomlinson, Whatstandwell.



Good-bye to the "Coal Tanks"

By J. W. Gahan

TO most of you the year 1881 must seem ages away. It was in that year that Mr. Francis W. Webb, then Chief Mechanical Engineer of the London and North Western Railway, designed a new class of steam locomotive, and it is certain that he would never have thought that one of these engines would actually see the light of 1958, seventy-seven years later. Yet this was so, for in the winter of last year there arrived at Crewe the lone survivor of this class, the members of which were officially known as "4 ft. 3 in. Side Tank Coal Engines".

These remarkable engines have become famous under the name of "Coal Tanks". They were a tank version of a class of very successful 0-6-0 "Coal Engines" of 1873, some of which actually lasted until the early Fifties of this century. The wheel arrangement of the tank engines was 0-6-2, and an unusual feature was the size of the trailing wheels, 3 ft. 9 in. in diameter as compared with 4 ft. 5½ in. of the driving or coupled wheels, and like the latter they had spokes of the characteristic Crewe H-section type.

There were three hundred Coal Tanks built between 1881 and 1897, and they

Above is one of the former L.N.W.R. Coal Tanks as L.M.S. No. 7759, fitted with widened tanks. It was photographed, when on station pilot duties, by E. Higgs.

were distributed widely over the system but principally on Merseyside and in South Wales. The brakes were found to be not very powerful, and so the engines were taken off coal traffic and became employed on local passenger trains, as with passenger stock braking was in force throughout the train, unlike that of goods trains, on which only the engine and brake van had braking power. Even when on shunting it was sometimes necessary to couple a vacuum-

fitted vehicle with the engine to provide sufficient brake power. The driver's brake valve was simple in the extreme, being merely a flap on the

vacuum brake pipe. When lifted this allowed air to enter, destroying the vacuum and applying the brakes.

The design of the engines was simple and rugged, characteristic of the practice of the L.N.W.R. They worked extremely hard and one has many memories of them, such as when shunting on a dark and wet windy night, with showers of sparks from the chimney, the slipping of wheels, and the ring of the side rods. Or again, when working a passenger train, they would start away with the familiar "tinny" puff,

increasing in tempo as the reversing wheel was brought back and speed gained. They could run fairly fast too, and the sight of one on a non-stop train passing through a wayside station was most exhilarating. When the regulator was closed, a chirruping sound would be emitted, and if viewed from a platform at night, the revolving cranks of the approaching engine were visible below against the glare from the ash pan.

The working of push-pull trains was a suitable task for the Coal Tanks, and many were fitted with the necessary gear for this purpose. Perhaps the hardest job of this nature was on the steeply graded Holywell Junction-Holywell Town branch in N. Wales. The engine pushed the coach upwards and trailed it in the rear on the descent, just as in mountain railway practice!

For duties on such trains in L.M.S. days a few Coal Tanks were sent away from their native system. For example Aintree, an ex-L. & Y. shed, had at least one for the Ormskirk-St. Helens line. The Wirral section also had a few prior to electrification in 1938, which worked the services in company with Fowler 2-6-2 tanks and a few Standard 0-6-0 tanks. Some of them on this section had widened side tanks to allow of increased water capacity.

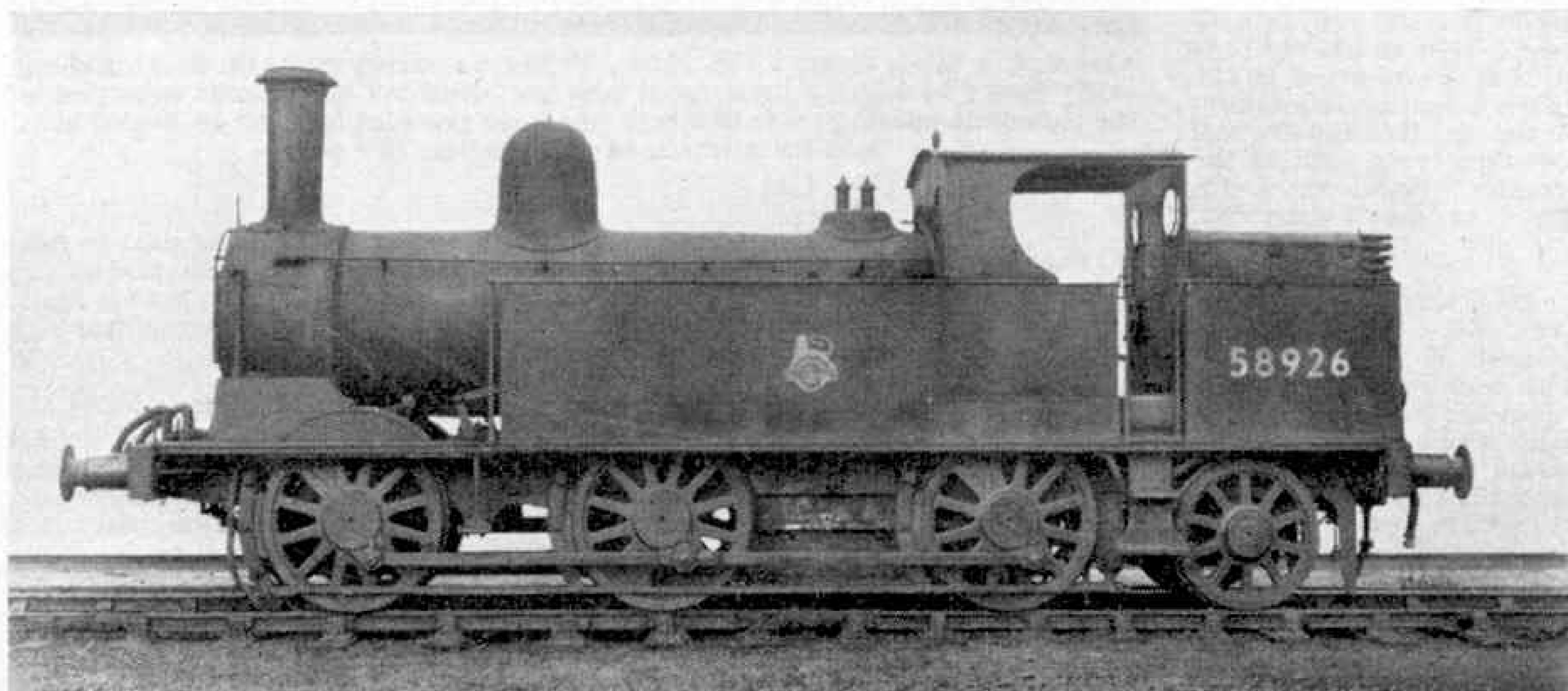
Perhaps one of the best known haunts of these little engines was Edge Hill. This depot employed them on the Alexandra and Canada Dock passenger services, and also on the line to Garston Dock, Ditton-Widnes etc. They were extensively used also on empty coaching stock between Edge Hill and Lime Street, and even as late as 1940 or so it was possible to encounter half a dozen in the vicinity of Lime St. station.

When the L.N.W.R. was merged into the London Midland and Scottish Railway, all but eight of the engines survived to receive the numbers 7550-7841. In 1934 the renumbering scheme introduced to allow new engines to have low numbers caused 7550-7681 to become 27550-27681. The sixty-four that became British Railways property in 1948 were renumbered between 58880-58937, with certain exceptions.

It is said that the Coal Tanks were nicknamed "Mourners", but the title they were known by in Liverpool was "Bootle Choppers", a title they earned by active service on the Bootle branch.

It seems incredible that a boy could have travelled in a passenger train in very recent times hauled by the same class of engine that was used on the trains on which his grandfather rode when young. And in these latter days the engines were little changed from their original condition. Ross Pop valves replaced the Ramsbottom safety valves in L.M.S. days, and beyond that only one or two other minor modifications were made.

One could recall countless memories of the Coal Tanks, as one by one they have dwindled away. Only old 1054, which later became L.M.S. 7799 and B.R. 58926 remained by 1958. This engine was built in April 1887. It saw little work in the last couple of years, and in October 1958 made its way to Crewe for breaking up. And so passed, not only the Coal Tanks, but also the last representative in main-line service of the hundreds of engines designed by F. W. Webb, one of the most remarkable of the Chief Mechanical Engineers of the Victorian Age who was literally King of Crewe for over thirty years.



B.R. No. 58926, the last Coal Tank in service. B.R. London Midland Region Official photograph.

Air News

By

John W. R. Taylor

Paratroop Life-Saver

When paratroops jump from aircraft like the Lockheed C-130 Hercules their parachutes are pulled open automatically by a cord known as a static line, which remains attached to the aeroplane. By the end of a mass jump there are quite a lot of used static lines flapping around in the airflow behind the door, and the last men have to beware of becoming entangled in them.

Accidents are extremely rare; and in future they should not happen at all, because Lockheed have now perfected a safety device that will haul a paratroop back into the aircraft if he gets entangled with the trailing lines.

The device is known as the Static Line Retriever System and was developed at the request of the U.S. Air Force. As each paratroop bails out, the 'jumpmaster' directing the operation watches the man's position in relation to the slipstream and the static lines. If the soldier becomes entangled, the jumpmaster has only to hook up a retriever cable and throw a switch for the paratroop to be reeled back into the cabin by an electric winch.

Initial tests with 400 lb. dummies have proved the efficiency of the system, which is being built into all new C-130s and to old ones as they are returned to the factory for modernisation. It can be fitted equally well to other types such as the smaller Fairchild C-123 Provider assault transport.

Amphibian Aids Oil Search

A Catalina amphibian is being used by the Pakistan Shell Oil Company to search for oil in the Bay of Bengal. It is by no means the first time that a "Cat" has been used for such work, but this particular operation is unique in that the special seismic equipment with which the aircraft is fitted will record the rock strata under the sea bed whilst the machine is taxied over the surface of the water, instead of during flight.

Surveys of this kind are made usually from a ship; but off the Ganges delta the Bay of Bengal is too shallow for large ships and the turbulence of the seas is too great for small vessels. The area is notorious for sudden heavy gales and strong currents, and only vessels capable of at least 20 knots have sufficient speed to escape in time. The crew of the Catalina could get away a lot quicker than that if necessary!

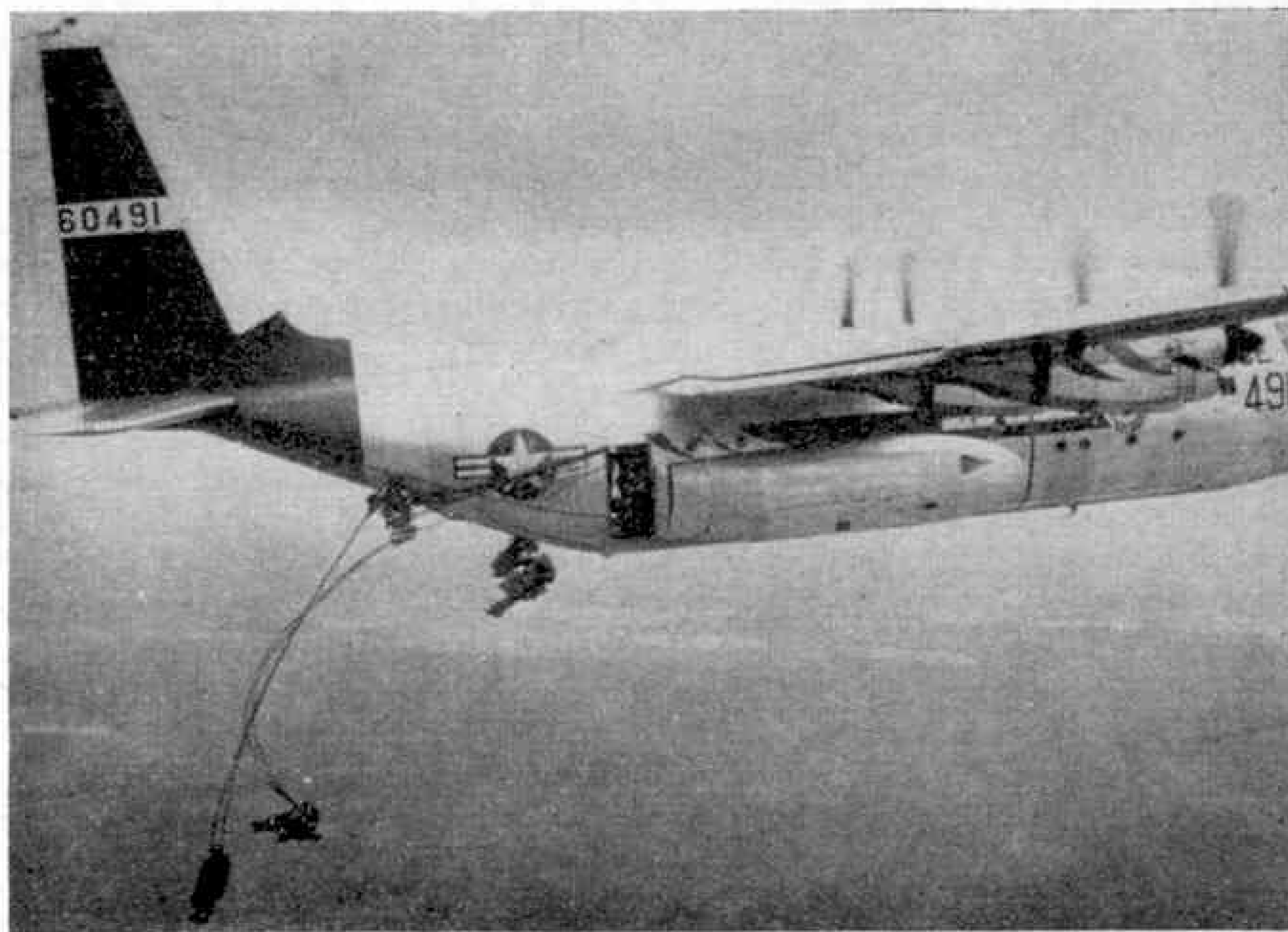
Flying Missionaries

Four Piper Comanche lightplanes have been bought by the Sudan Interior Mission, which has its headquarters in Nigeria, for use in its missionary, educational and welfare work throughout central and northern Africa. This is a great tribute to the sturdy reliability of the little monoplanes, because members of the Mission have to fly into and out of some of the worst landing strips in the world to reach their hospitals, leprosy clinics and schools in remote areas.

Rockets Fight Fires

Sidewinder air-to-air rockets, of the kind used by Chinese Nationalist Sabre pilots to shoot down Communist MiG-15s near Formosa, may soon go into service to fight an entirely different kind of battle.

Secret of the Sidewinder's success is the infra-red unit in its nose, which flies towards anything warm. The usual target is the hot exhaust of a jet aircraft; but tests made by technicians of the U.S. Forest Service have confirmed that the missile will seek out the heart of a forest fire with equal certainty. The result is a powerful new fire-fighting weapon, for it is proposed to replace the usual explosive warhead with a solid foam-type fire-killer and to launch this type of rocket from a rack mounted under the fuselage of Forest Service helicopters.



This picture, taken during a U.S. Army/Air Force exercise, shows the new Lockheed safety device by which a paratrooper who has bailed out and become entangled in the parachute-opening cords of others who have preceded him can be hauled back into the aircraft, as described on this page.

In time, the same technique might be used to fight outbreaks of fire in industrial plants, oil refineries and chemical factories, where the tremendous heat or fumes produced often prevent firemen from getting near with hoses.

Russian Helicopter Service

The Russian airline Aeroflot opened its first regular helicopter passenger service between Simferopol and Yalta, on the Black Sea coast, on 20th November last. Aircraft used are 10-seat Mi-4s, which make the journey in 25 min., compared with four or five hours by motor coach.

* * * *

The R.C.A.F. have cancelled further development of the 1,500 m.p.h. Avro Arrow interceptor and Canada will rely on Boeing Bomarc missiles for its air defences in the 1960s.



The Vickers Vanguard turboprop air liner, which made its first flight on 20th January this year.

Viscount's Big Brother

Few air liners have made such excellent progress in their early flight testing as the new Vickers Vanguard, illustrated above. Within nine days of its first take-off on 20th January this year, it had logged 10 hr. 45 min. flying time, and already showed promise of being as much of a winner as its smaller brother, the Viscount.

The Vanguard makes surprisingly little noise at take-off, although powered by four Rolls-Royce Tyne turboprops of 5,000 h.p. each. This should help to make it popular, as should its ability to carry up to 139 passengers at a cruising speed of 425 m.p.h. and with lowest-ever fares. B.E.A., who have 20 Vanguards on order, have stated that it should make possible a London-Paris return fare of not more than £8.

Despite these attractions, some experts see little future for this superb aircraft, or any other air liners powered by turboprops. They predict that passengers will prefer the faster jets, and point out that the only other customer for the Vanguard so far is Trans-Canada Air Lines, which has also ordered twenty. Time may prove the experts wrong, because the real key to greater airline profits is to bring down fares, not to chop a few more minutes off a trip such as London-to-Paris, which takes little more than an hour's flying time even now.

Dornier Come-Back

First military aircraft of German design to enter service since the war is the Dornier Do 27, a civil version of which is illustrated below. The prototype was developed in Spain before aircraft construction was permitted in Western Germany. This enabled the Do 27 to be put into production at Munich very quickly, and deliveries of the 428 aircraft of this type ordered by the German armed forces had reached nearly 20 a month by the latter half of 1958.

Of very clean cantilever monoplane design, the military Do 27 is powered by a 275 h.p. Lycoming engine and can be used for observation, liaison, casualty evacuation, training and light transport duties, carrying up to five persons. It spans 39 ft. 5 in., is 31 ft. 6 in. long and weighs

3,460 lb. fully loaded. Its top speed is 155 m.p.h., but the most valuable feature of the Do 27 is its ability to take off and land on wheels, floats or skis from very small areas.

Supersonic Air Liners

According to R. C. Sebold, Convair's vice-president of engineering, an air liner capable of flying at twice the speed of sound could be put into production now for delivery in 1965. However, he does not believe such a machine will be built, because airlines will probably prefer to wait an extra five years for transports able to fly at three to five times the speed of sound.

What will these 2,000-3,300 m.p.h. aircraft look like? The answer according to Mr. Sebold is a tail-first, delta-wing machine not so very much different from the advanced military designs of today. Main difference from the passengers' viewpoint may be the absence of cabin windows, because designers must avoid too many cut-outs in the skin of an aircraft that will be highly-pressurised for flight above 60,000 ft.

Engineers of the Douglas company have given 1970-72 as the date by which a 2,000 m.p.h. air liner should be flying. They predict it as a six-jet machine with a loaded weight of around 250 tons and capable of carrying 160 passengers for 4,000 miles. A man taking off from London at 9 o'clock in the morning in such an air liner would land at New York three hours *earlier*, at 6 a.m. local time.

The main snag seems to be a little matter of some £350 million needed to develop the aircraft.

* * * *

During a recent exercise, five Valiant bombers of No. 543 Squadron of the Royal Air Force were airborne within 6 min. 2 sec. of being ordered to 'scramble'.



A civil version of the Dornier Do 27, the first military aircraft of German design to enter service since the Second World War.

The Dounreay Mystery

By Alan Platt, B.Eng., Ph.D.

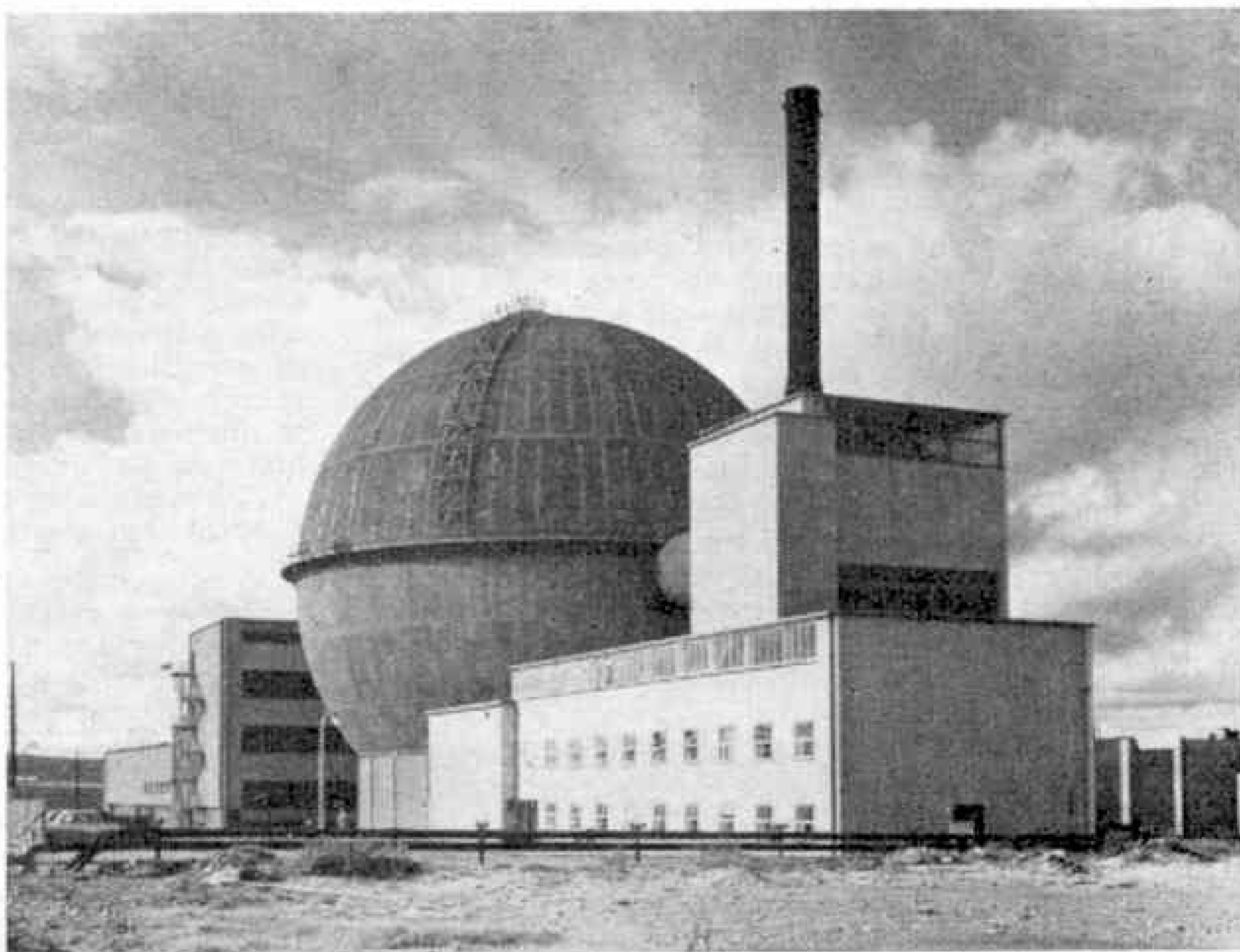
On the bleak and often stormy shore of the Pentland Firth, in the far north of Scotland and not far from Thurso, is a mass of great buildings, one of which is a gigantic sphere rising to a height of 135 feet. In this article the author, who is a nuclear scientist, describes what happens inside the enormous sphere and explains the purpose of the installation.

IN Britain's nuclear power stations, such as Calder Hall and the larger stations at present being built, the fuel is natural uranium. This is produced directly from uranium ores brought from overseas, and is a mixture of two different sorts of uranium. The first, called U235, is the true fuel, as it is "fissile", that is the atom will split if struck by a tiny particle called a neutron. In every hundredweight of the natural uranium, there is only $\frac{3}{4}$ -lb. of U235. The remainder is called U238, and cannot be split.

For power to be produced from a nuclear fuel, a certain quantity, called the critical mass, must be gathered together. A critical mass of a dilute fuel such as natural uranium can only be achieved if the neutrons produced when a U235 atom breaks up are slowed down before they reach another U235 atom. This is ensured in our reactors by inserting the fuel rods into holes in an immense stack of graphite blocks. The graphite is known as a "moderator", that is, it has the required property of slowing down, or "moderating", the neutrons. A very large reactor core is necessary—the graphite and uranium assembly in the Calder Hall reactors is 35 ft. in diameter and 25 feet high, that is, about the size of a pair of semi-detached houses.

The fission of a U235 atom gives the energy which we eventually turn into electricity, and also yields some neutrons. From each atom undergoing fission a neutron must be spared to cause fission in a

new U235 atom, otherwise the nuclear "fire" would die out. Some neutrons escape from the assembly without striking another atom, and others meet with atoms of impurities or of the structure and are caught by them. The remaining neutrons are swallowed up by U238 atoms, and change these to a new element—plutonium. The plutonium is fissile, and can be separated chemically from the remainder of the fuel after it has been removed from the reactor. It could be used to yield more power. In



The most prominent feature of the reactor plant at Dounreay is the gigantic sphere, 135 ft. high. Our illustrations are from U.K.A.E.A. photographs.

the Calder Hall variety of power station, in which a moderator is required, the atoms of plutonium which are produced are less in number than the atoms of U235 which have been used up.

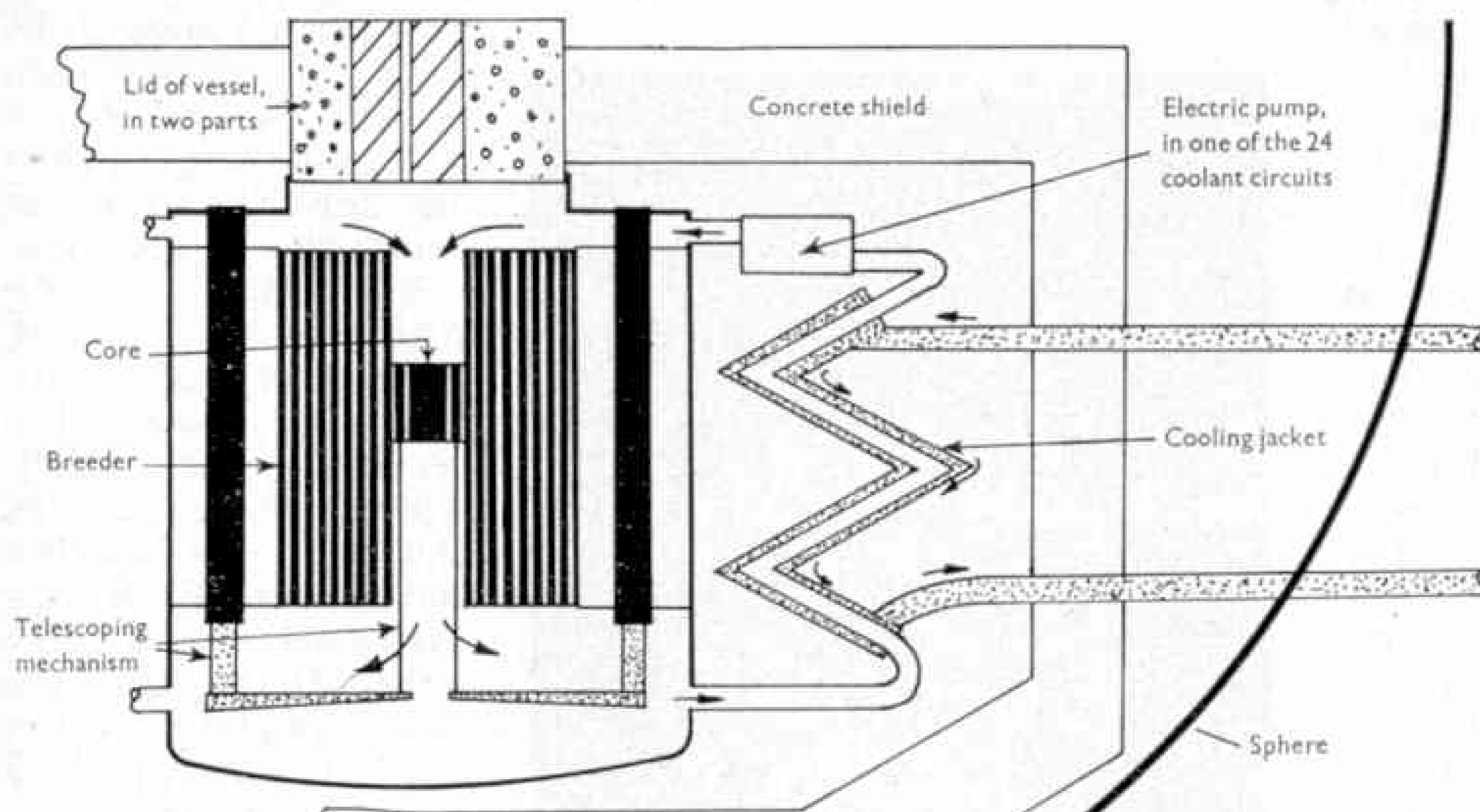
If we use a nuclear fuel which contains U238 with a much higher concentration of fissile material than natural uranium, the critical size of the reactor becomes much smaller; and moreover we no longer

need to slow down the neutrons. Because of the high speed of the neutrons such a reactor is called a "fast reactor". The core size will be quite small—in the Dounreay reactor, which is of this type, it is about as big as a dustbin. The increase of speed of the neutrons has an important effect on the numbers of neutrons produced by each

Capenhurst diffusion plant, in Cheshire, that will first be used to fuel the Dounreay reactor. Later, the graphite and natural uranium reactors will be producing enough plutonium for some to be available for use at Dounreay. The Dounreay plant is thus an experimental one in which fast breeders will be studied generally, and the possibilities

of enriched uranium and plutonium fuels investigated. After a few years' work enough information should be obtained for a full-scale power station to be built.

As has been mentioned, the core of the Dounreay reactor



This drawing shows the parts of the Dounreay reactor core and the cooling system.

fission, and also on the numbers wasted in collisions with impurities. The net result is that the atoms of plutonium produced are slightly greater in number than that of the fissile atoms consumed.

This increasing of the numbers of fissile atoms is called "breeding", and hence the full title of fast breeder reactor. The process is the vital fact that makes the fast reactor so important in our nuclear power programme. To realise this, imagine what will happen when we eventually have a large number of reactors of different types in operation. Some of the reactors, that at Calder Hall, for instance, will be what are called thermal ones, producing power by using up atoms of U235; others will be fast reactors, fed with plutonium, and "breeding" plutonium from U238; the remainder will be thermal reactors using plutonium. If the right numbers of each type were chosen, all the U235 and U238 in the natural uranium would be used up, the former directly and the latter by first converting it to plutonium.

Some of the U238 that is always present in natural uranium can be removed in a vast and expensive plant called a diffusion plant. It is enriched material from the

is about the size of a dustbin. The enriched uranium, in the form of tubes, fits between two stainless steel end plates. Several hundred tubes are arranged vertically to form a closely packed nest. The coolant can flow between and through the tubes. The core, coolant circulation arrangements and other parts described below are shown in the diagram.

Around the core is the breeder region. Some of the plutonium will be produced from the U238 in the core. The rest will be produced in rods of natural uranium, about 8 feet long, which surround the core and capture most of the neutrons that escape from the latter. The breeder rods form a nest far larger than the core, and there are many hundreds of the rods. Coolant also flows around the breeder rods.

To control the reactor some of the fuel elements—about one third—can be moved in or out of the core. There are twelve groups of these control elements, each carried on a beam beneath the core. The beam forms part of a telescoping mechanism driven by a two-speed and reverse gear box. The lower limb of the telescope arrangement is held by an electromagnet in such a way that if the power supply fails or the core overheats, or if an emergency stop button is pressed, the magnet is de-energised, the control elements crash down from the core, and the chain reaction is stopped.

At full power 60,000 kW of heat will be produced in the tiny space of the core. Some highly effective cooling fluid is required to prevent the fuel from overheating. A mixture of the metals sodium and potassium will first be used at Dounreay. These are soft, light solids at ordinary temperatures, but the mixture to be used is a liquid above 40 deg. C, which is a little above blood heat. Electric heaters fitted to the reactor make sure that the temperature cannot fall below this value.

Metals are excellent conductors of heat, and if liquified and pumped through the core are capable of carrying away the heat produced very effectively. As they also conduct electricity very well, the metal can be used as the "armature" of an electric motor and caused to move. If an electromagnet is fixed around part of the liquid metal pipework, and an electric current passed across the pipe through the liquid, then the liquid metal is made to move along the pipe. We can thus pump the liquid without the use of moving parts. The Dounreay pumps operate in this fashion, but are a little more complicated in that they are more like an induction motor, being powered by A.C.

The core, breeder and control rods are all contained in a large stainless steel vessel, filled with the liquid metal. The flow down through the core is set up by twenty-four of the special pumps. Each pump is part of a separate circuit formed by a long pipe, which connects at one end to the bottom of the vessel, from which the metal is drawn, and at the other to the top, to which the metal is returned.

The illustration on this page shows the complete vessel being lowered through the top of the steel sphere that is the reactor's best known feature. The top part of the sphere was left incomplete until the vessel was ready to be fitted. This was a ticklish

operation, since the driver of the derrick crane outside the sphere could not see the vessel once it was inside the sphere and had to work from hand signals. The numerous short pipes near the top and bottom are the stubs to which the twenty-four circuits were connected.

To cool the hot liquid metal that emerges from the core, a cooling jacket is fitted round most of the long pipe of each circuit. A second flow of liquid metal passes through this jacket and cools the main flow.

The core of the reactor will, of course, be intensely radioactive after it comes into service. The coolant which passes through the core also becomes radioactive. To protect personnel from the radioactivity all the pipework and the vessel must be enclosed by thick concrete walls. As the secondary liquid does not pass through the core it will not become active, and so can be pumped along pipes, again by electrical pumps, out through the shielding walls and away to a separate building, where it heats water and produces steam to drive the 15,000 kW turbo alternator.

In case there was ever an accidental leak of radioactive gas from

the vessel, or any other release of activity, the whole of the shielding is enclosed by the steel sphere, 135 feet in diameter. This is airtight, and can be entered only by an air-lock. The secondary liquid metal pipes and other services pass out through the sphere walls.

The sphere was built up by welding together plates pressed to shape at the makers' works. Each plate was positioned accurately using a system of radial arms mounted on a tower at the centre of the sphere-to-be. Much of the welding was done from most awkward angles, and some of the scaffolding used by the welders can be seen in the illustration on this page that shows the reactor vessel being lowered into position within the gigantic sphere.



Lowering the reactor vessel within the great sphere at Dounreay. This had to be done before the last plates of the sphere had been welded in place. Behind the core the scaffolding used by the welders can be seen.

MECCANO MAGAZINE

Junior Section

DO you know what a greasehorn is? The name is a dialect description of someone who flatters to secure a favour. This is only a secondary meaning, however. Its first meaning is the object seen in the lower picture on this page.

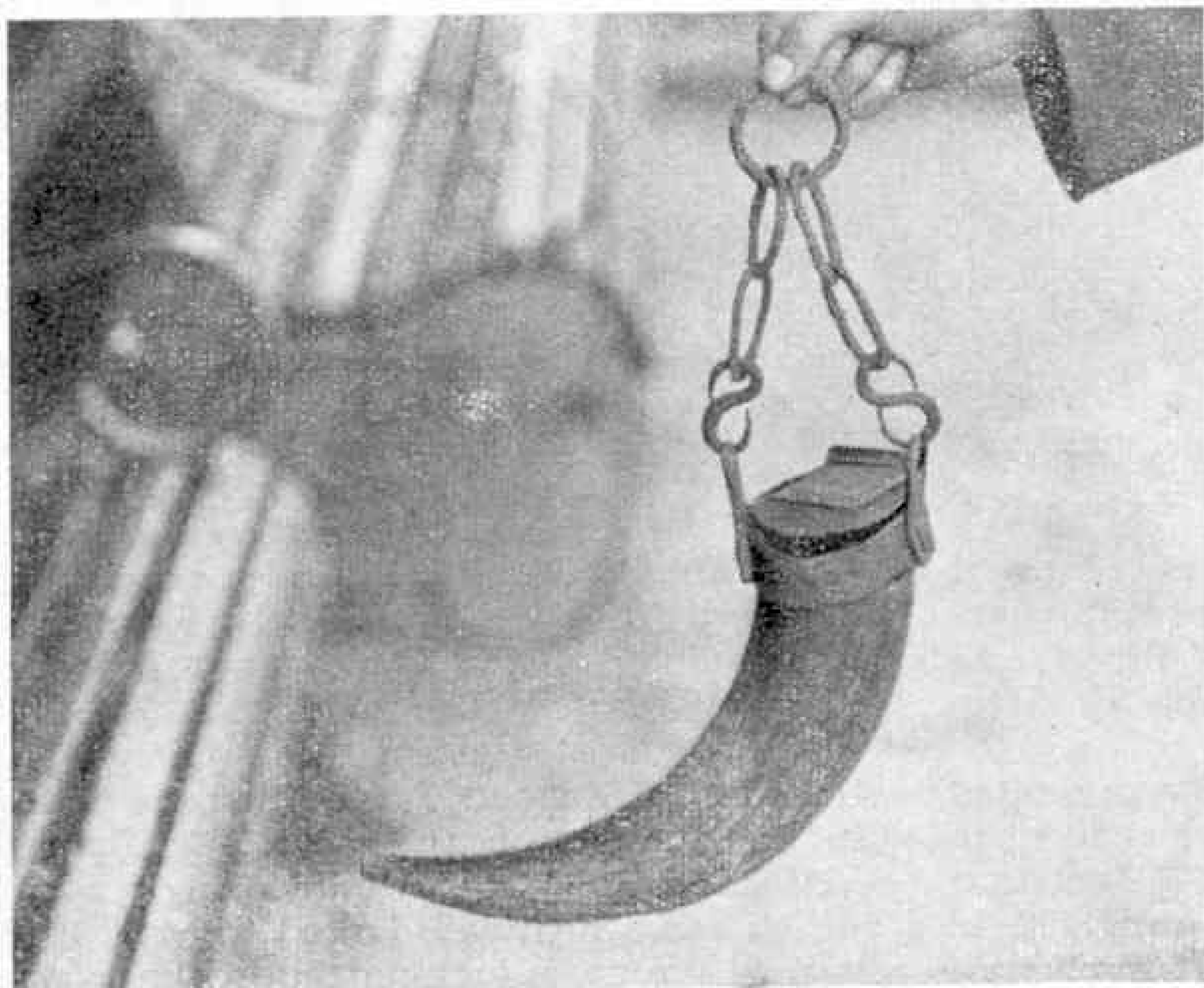
Now this object is interesting. We have been told that the invention of the wheel was one of the most important events of our human story, but it could be argued that the invention of lubrication was of at least equal importance, for without oil or grease wheels could not act efficiently. Our grandfathers did not have the oils that are available today, and the grease they used for the axles of their carts and wagons



Pekka Korhonen, who lives in Naantali, Finland, enjoying himself with his Hornby Train.

came from the kitchen and was just put on with a stick. The object in the picture is a horn of the kind once used for carrying the grease. It was suspended by a chain from the wagon, and the cover over it was there to keep out dirt.

G. Crowther, Keighley, who took this photograph, tells us that this greasehorn was found some time ago on a farm near Keighley. It was partly buried when it was discovered and is an excellent example of this primitive but vastly important contrivance. We have moved a long way since this primitive system was used. It would not be much use to the modern tractor driver.



A horn that carried grease for lubricating cart wheels. Photograph by G. Crowther, Keighley.

Easy Model-Building

"Spanner's" Special Section for Juniors

A See-Saw and an Articulated Lorry

THE See-Saw is shown in Fig. 1 and all the parts needed to build it are contained in an Outfit No. 00.

The base of the model consists of a $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate, to which two Trunnions 1 and 2 are bolted. Then a $2\frac{1}{2}"$ Strip is bolted to each Trunnion to form the pivot of the See-Saw. A $5\frac{1}{2}"$ Strip is used for the plank and two Angle Brackets are bolted to its centre hole. These Angle Brackets in turn are *lock-nutted* to each of the $2\frac{1}{2}"$ Strips. To do this the shank of a bolt is passed through the Angle Bracket, and a nut is placed on it but is not tightened against the Angle Bracket. The shank of the bolt is then pushed through the centre hole of the $2\frac{1}{2}"$

A list of the parts required to build the See-Saw is given at the end of this article.

Two $5\frac{1}{2}"$ Strips form the chassis of the Articulated Lorry seen in Fig. 2 and to each of them is bolted a $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate and a built-up $4\frac{1}{2}"$ strip. The sides are joined at the front by a $1\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate, which is connected to each side by Angle Brackets. The back of the cab is a $4\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate, which is also connected to the sides of the cab by Angle Brackets. Two $2\frac{1}{2}"$ Strips are bolted to the front ends of the $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plates and an Angle Bracket is bolted in their uppermost holes. Similarly an Angle Bracket is bolted to each of the $4\frac{1}{2}"$ strips. The roof of the cab is a $2\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plate, which is bolted to each of the four Angle Brackets.

The single front road wheel is a Bush Wheel that is fixed on a $\frac{3}{8}"$ Bolt. The Bolt is passed through a $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip fixed by its lugs between the $4\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate that forms the back of the cab and the $2\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plate at the front.

The radiator consists of two Flat Trunnions and a Stepped Curved Strip is bolted to the upper Flat Trunnion.

The rear wheels of the articulated unit are two 1" Pulleys fitted with Tyres,

which are fixed on a $3\frac{1}{2}"$ Rod journalled in the third from rear holes of the $5\frac{1}{2}"$ Strips.

The floor of the trailer is a $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate. The sides are $5\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plates edged with $5\frac{1}{2}"$ Strips. At the front a Stepped Curved Strip is bolted to the flange of the $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate and a $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip, which has a Fishplate bolted to each of its lugs as shown, is lock-nutted in the second

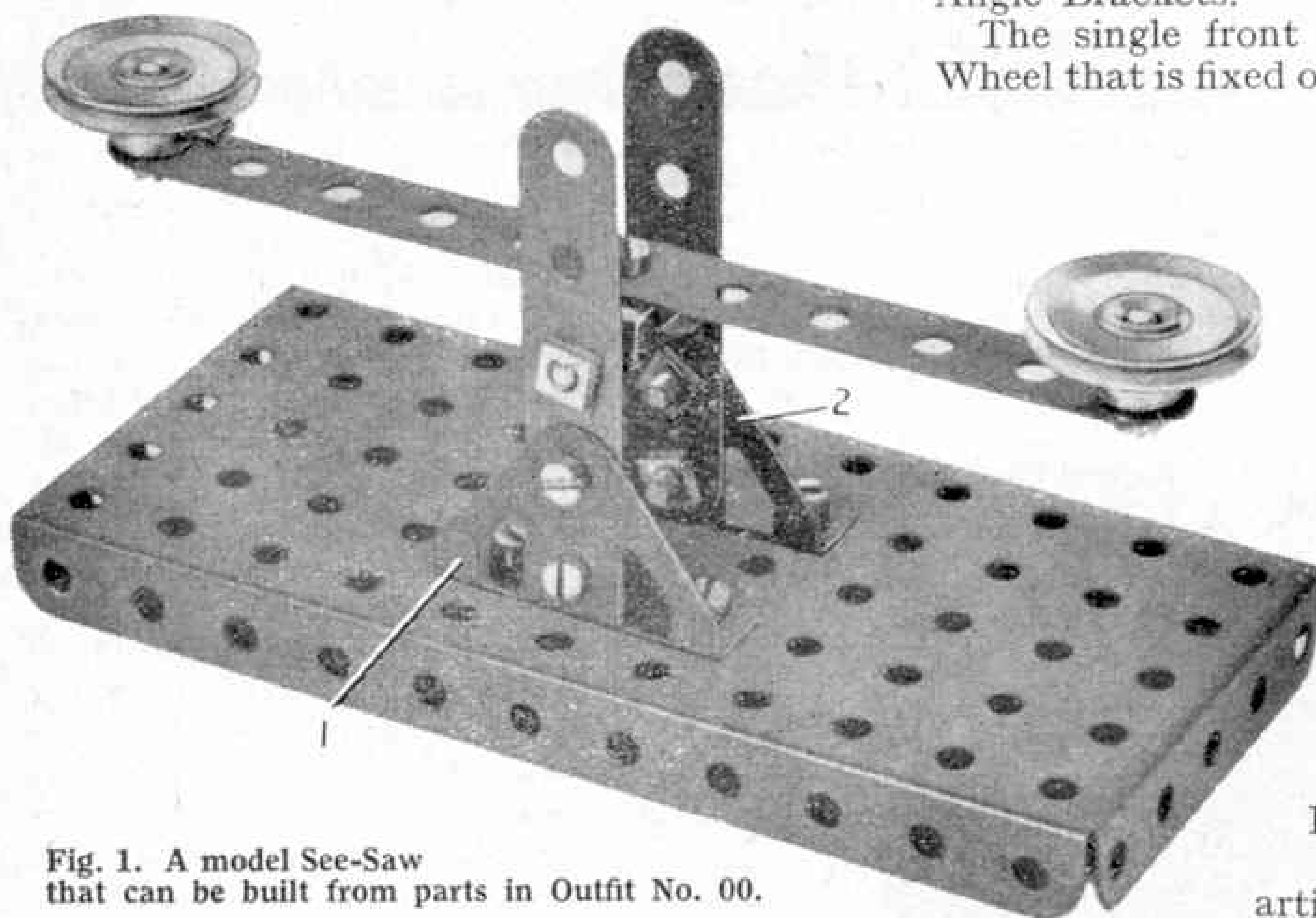
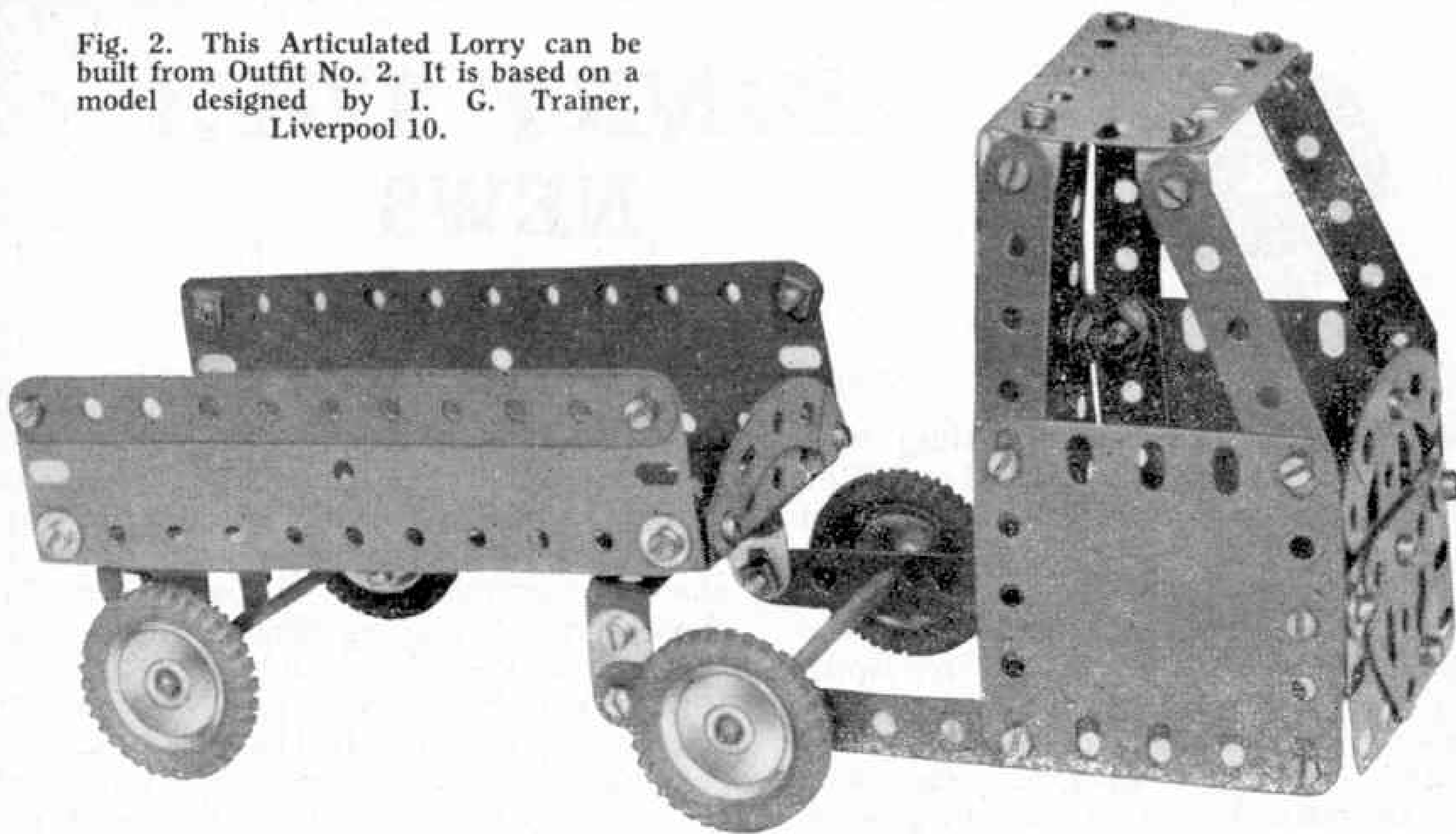


Fig. 1. A model See-Saw that can be built from parts in Outfit No. 00.

Strip and a second nut is screwed on it outside the Strip. The two pairs of nuts are then tightened against the $2\frac{1}{2}"$ Strips. As a result of this arrangement the $5\frac{1}{2}"$ Strip is free to pivot.

The seats of the See-Saw are represented by two 1" Pulleys, one of which is fixed to each end of the $5\frac{1}{2}"$ Strip by a $\frac{3}{8}"$ Bolt that is passed through the Strip, and held in the boss of the Pulley by its set-screw.

Fig. 2. This Articulated Lorry can be built from Outfit No. 2. It is based on a model designed by I. G. Trainer, Liverpool 10.



centre hole from one end of the Flanged Plate. The Fishplates are bolted to the $5\frac{1}{2}$ " Strips of the articulated unit. The rear wheels of the trailer are mounted on a $3\frac{1}{2}$ " Rod that is journalled in the lower holes of two Trunnions fixed to the Flanged Plate.

Parts required to build the Articulated Lorry:—4 of No. 2; 6 of No. 5; 2 of No. 10; 8 of No. 12; 2 of No. 16; 4 of No. 22; 1 of

No. 24; 45 of No. 37a; 40 of No. 37b; 8 of No. 38; 2 of No. 48a; 1 of No. 52; 2 of No. 90a; 4 of No. 111c; 2 of No. 126; 2 of No. 126a; 4 of No. 142c; 2 of No. 188; 2 of No. 189; 2 of No. 190; 1 of No. 191.

Parts required to build the See-Saw:—1 of No. 2; 2 of No. 5; 2 of No. 12; 2 of No. 22; 13 of No. 37a; 11 of No. 37b; 1 of No. 52; 2 of No. 111c; 2 of No. 126.

BOOK REVIEWS

"THE BELFAST AND COUNTY DOWN RAILWAY"

By E. M. PATTERSON
(The Oakwood Press)

This is No. 15 in the Oakwood Library of Railway History. In it the author, a contributor to the *M.M.*, traces the story of the "County Down", that is the Belfast and County Down Railway, which played no small part in the development of the area which it served since its beginning over a hundred years ago. Much else is covered too, including train services, signalling, locomotive history, steamer services and its activities during the 1939-45 War. In addition, there are numerous illustrations and also tables of locomotive data and other information.

The book will be of considerable value to railway historians now that much of the system, and all its steam locomotives, have vanished. The surviving section of line between Belfast and Bangor, which carries considerable passenger traffic, is now operated by the Ulster Transport Authority and is completely worked by diesel trains.

Copies of the book can be obtained from the Oakwood Press, Bucklands, Tandridge Lane, Lingfield, Surrey, price 8/6d. nett.

* * *

"THE AEROPLANE PICTORIAL REVIEW" (No. 3) (Temple Press, price 10/6d.)

The many new and spectacular types of aircraft and missiles which made their appearance during last year make this third annual collection of photographs from *The Aeroplane*, the well-known aeronautical weekly, of special interest. The 250 or so photographs reproduced here were selected from the finest and most informative illustrations in that journal since the

previous Review, and they provide an excellent pictorial record of an eventful period of aeronautical progress throughout the world.

The aircraft illustrated cover a wide range of types and nationalities, and include the latest jet air liners of Great Britain and the United States, the newest fighters, bombers, troop-carriers and trainers of the world's air forces, V.T.O.L. aircraft, guided missiles, naval aircraft and helicopters. In addition there are illustrations of people and events which have made the year's aviation news. The illustrations are grouped in sections for ease of comparison, and each is accompanied by a descriptive caption.

* * *

"RAILWAY SIGNALLING SYSTEMS"

By J. R. DAY and B. K. COOPER
(Muller, price 9/6d.)

This book, forming part of its publisher's *Mechanical Age Library*, is sure to appeal to all railway enthusiasts, even to those who have a reasonable knowledge of railway signalling. It deals easily and simply with the growth of the justly famous British railway signalling system, from the somewhat primitive days of "policemen" to the power installations of today, some of which provide control from a single point of sections of line involving many complex junctions and perhaps miles of track.

These things are all dealt with in a fascinating manner, the application of power to signal and point movements, track circuits and automatic train control being considered in detail. The reader is aided by excellent drawings and reproductions from photographs, which illustrate the text in a comprehensive manner.



DINKY TOYS NEWS

By **THE TOYMAN**

I AM normally kept busy dealing with correspondence from Dinky Toys Club members and collectors generally. But during these past few weeks I have had to cope with an absolute flood of congratulatory letters from enthusiastic collectors who now have one of the new Dinky Toys Rolls-Royce "Silver Wraith" cars. This superb new model, incorporating as it does so many new and distinctive features, has won universal admiration. This is not surprising, and it is safe to say that here is a Dinky Toy that every enthusiast should have recorded in his Collector's Licence.

It is not only in this country that Dinky Toys make their appeal. In practically every civilised country of the world there are hundreds of collectors who are just as keen as those at home, and I am constantly receiving letters from them telling me about

their collections and suggesting new items for the Dinky Toys range. Many of them send me photographs of their Dinky Toys collections, and I hope more will do so, as there is nothing I like better than seeing these and reproducing them here as far as space permits. Here, for instance, is one from three brothers living in Montreal, Canada, seen in it with part of their fine collection. Graham Weeks is on the left, with his brothers Stephen, in the centre, and Andy, on the right. All are members of the Dinky Toys Club and judging by the expressions on their faces it is evident that they are extremely proud of their Dinky Toys possessions.

I have been having a lot of fun lately building up various layouts and planning play schemes for various kinds of Dinky Toys. Part of one of the layouts I rigged up is shown in the picture at the top of page 189. The general idea of the layout, or rather the part of it shown in my picture, was to represent the mail delivery section of a General Post Office, so as to give me an opportunity to make use of a number of Dinky Toys Royal Mail Vans I possess. You will notice in the foreground a van leaving the sorting office for the railway station with a load of mail. After arrival at the station it will be unloaded and driven back to the Post Office for another load. Meanwhile two other vans are being loaded up.

The buildings I used were adapted from some old structures I had by me from previous layouts, and if you are discerning you may have noticed them in other pictures I have included in the *M.M.* previously. All that was required to make them fit here was repainting. The platform from which the vans are loaded is made from thick cardboard so that it can bear the weight of the buildings. I have



Andy, Stephen and Graham Weeks, Montreal, Canada, and their collection of Dinky Toys.



Mail dispatch time at a General Post Office. A setting of this kind provides good scope for play with the Dinky Toys Royal Mail Van.

also made good use of pieces from a Dinky Toys Pavement Set.

The other vehicles shown in this picture are the recently reintroduced A.A. Motor Cycle Patrol and the Dinky Supertoys Leyland Octopus Tanker "Esso", which always makes a striking and handsome addition to any road scene.

Almost any main road will provide

scenes similar to that shown in the lower picture on this page, which represents a motor car showroom, garage and filling station. This is one that provides plenty of opportunities for good play with Dinky Toys vehicles. The setting is in the countryside, and the only thing missing is the sign *Last Petrol Station for — Miles*, which is sometimes seen at such places.



A typical roadside garage and filling station scene. A lot of fun can be had with a layout of this kind.



Here is another interesting road section that could be incorporated in a large layout. The car towing the caravan, Dinky Toys No. 190, is the Plymouth Plaza, No. 178.

I will confess that I intended to include this, but unfortunately forgot to do so!

I must mention that the petrol pumps shown in this picture are some of the old Dinky Toys Petrol Pumps and some of you will be able to substitute the Esso Petrol Pump Station No. 781 for them. A lot of fun can be had with a small layout of this kind. In my example all the usual activities of a filling station are taking place. For instance, one of the attendants is wiping the windows of the "Esso" Van in the background, while three others are serving petrol and oil. Evidently the motto at this depot is "prompt service", for the number of attendants is greater than is usually found in a depot of this size.

Thin cardboard supplied all the material

required for the various buildings, and a point that readers may like to note is that the low wall at the edge of the pavement is built up of wooden building bricks. The shrubs are bits of wire wool ruffled out and stuck on small twigs.

The Dinky Toys car shown towing a Caravan in the attractive setting at the top of this page is the Plymouth Plaza, which by now is owned by thousands of Dinky Toys collectors. As you can well imagine, a big car of this kind is just the thing for towing a caravan. It is obvious from the picture that the driver of the Plymouth Plaza will need all his skill to manoeuvre his car in such a confined space and get it safely past the Coles 20-ton Lorry Mounted Crane! Of course the picture may be a trifle deceiving, but I think not, because the passers-by are taking a lot of interest in the proceedings, just as in real life people love to watch any tricky feat being performed.



This is 10-years old Anthony Leay, Blackburn, who has over 100 Dinky Toys. He is a very keen member of the Dinky Toys Club.

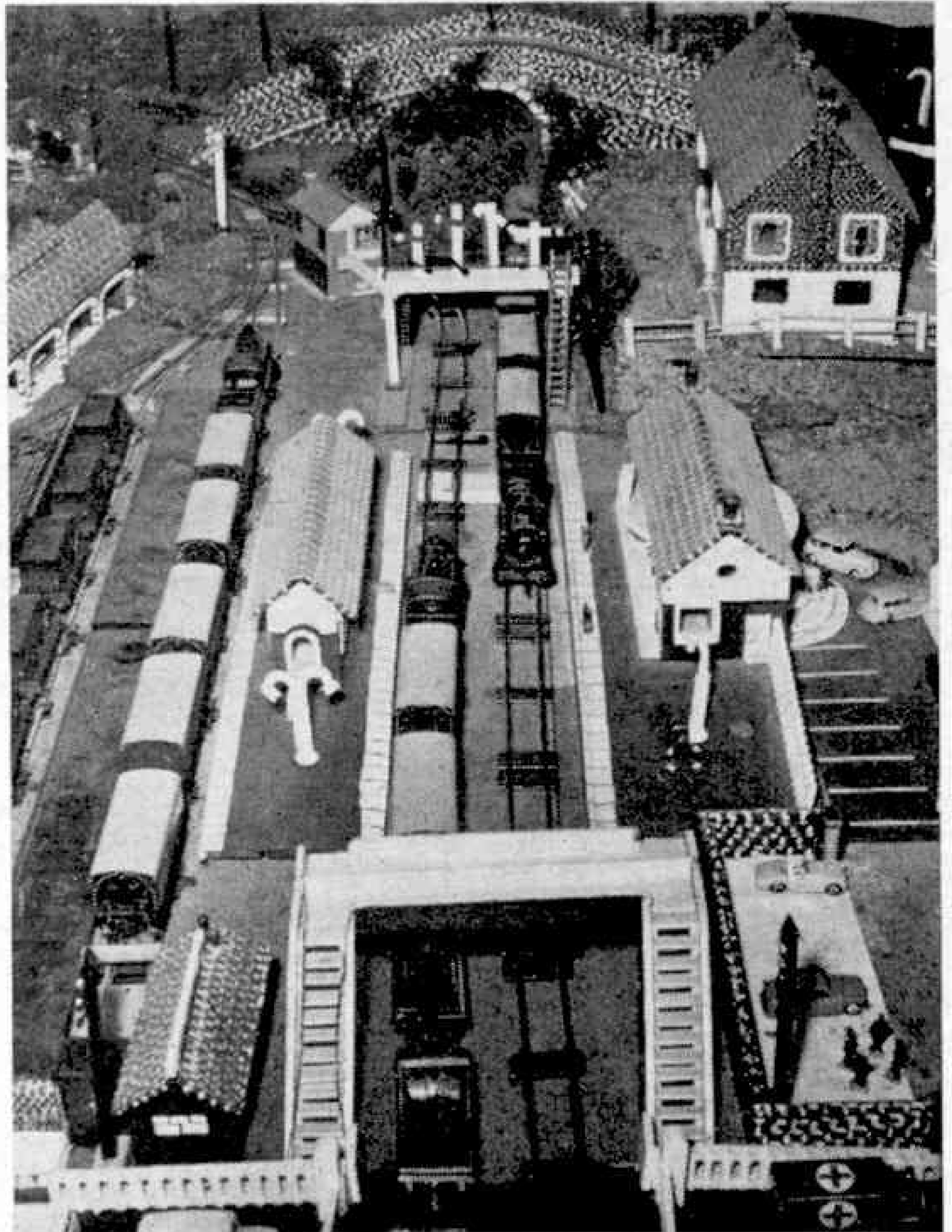
"Tommy Dodd"
writes about:

Fun on the Floor

YOU have seen the layout on the right before, in September 1957, but I am including this different view of it because the picture illustrates several points that we can talk about. The railway shown is that operated by William John Fuller, of Camberley, who has been able to take splendid advantage of the space that is available for it on the floor of the room that it occupies.

You will remember that last month we had a chat about lineside buildings, and in particular about a simple form of engine shed that could be put together fairly easily at home. This time there are several different buildings for you to look at and I hope that they will give you some useful ideas. Lineside effects carried out in a neat and attractive manner add considerably to the realism of any layout.

Turning to the traffic side of things, the layout is sufficiently extensive to make fairly long trains possible, as is evident from the five-coach formation to the left of the island platform in the picture. This suggests an extension of the scheme mentioned recently of using on Hornby No. 51 Coaches the destination board labels that are produced for Hornby-Dublo purposes. These suit the four-wheelers of the Hornby Gauge 0 system quite nicely and it is rather fun to be able to show where our trains are going. Where there is a sufficient number of Coaches in the

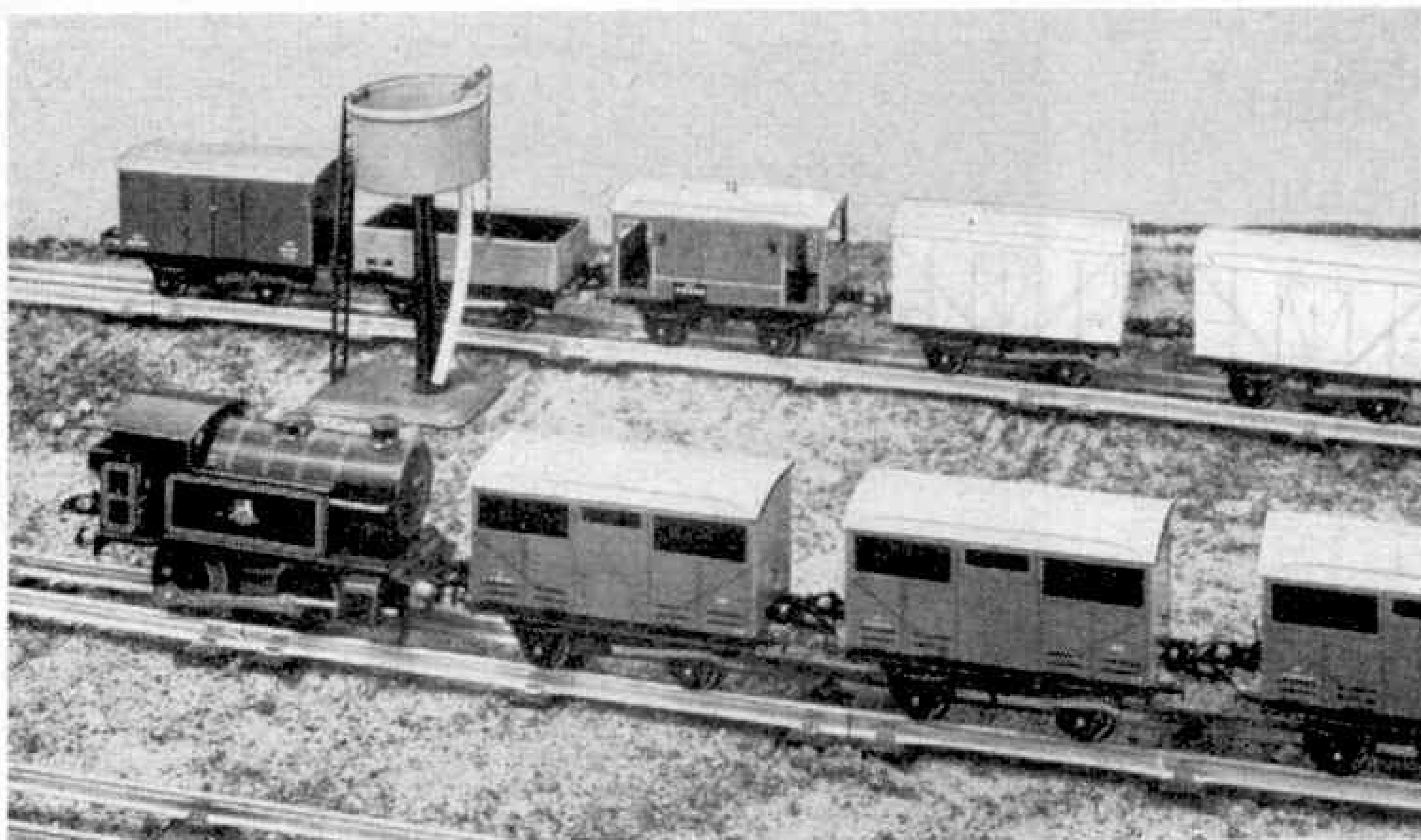


Above is part of the Gauge 0 layout of William John Fuller, Camberley, on which Hornby rails and trains are used. The lineside effects are all home-made.

train we can arrange for different sections of it to serve different destinations. Thus one might quite well have one section labelled for instance *Kings Cross-Edinburgh*, with another Coach or two perhaps bearing the wording *Kings Cross-Perth*.

As I have said before in these pages, I am always glad to hear of ideas that any of you use in connection with your Hornby Trains. While we are on the topic of train destinations, it will no doubt be of interest to you to hear

how *M.M.* reader John Furmage, of Falkirk, fits headboards to those of his Hornby Locomotives that have lamp brackets. John says: "I cut out the large scale representations of the headboards, found in the 4d. Meccano *Toys of Quality* catalogue and stick these to card. I then add a card loop at the back and I have engine headboards which can be hung on the top lamp bracket of the larger Nos. 50/51 Hornby Locomotives. Of course, these 'boards' are rather large but this is only a small consideration in comparison with the



A train of empty Cattle Wagons runs through the yard in charge of a Hornby No. 40 Tank Locomotive.

picture, which shows a happy train working scene on the railway of Terence Newman (H.R.C. No. 30142) and his brother Kenneth (H.R.C. No. 30143), of Petersfield,

air of respect which one's trains bear using these headboards."

Some of you may prefer to prepare your own headboards, doing the necessary painting and lettering on nice smooth card. This will enable you to produce parts that are more correctly to size.

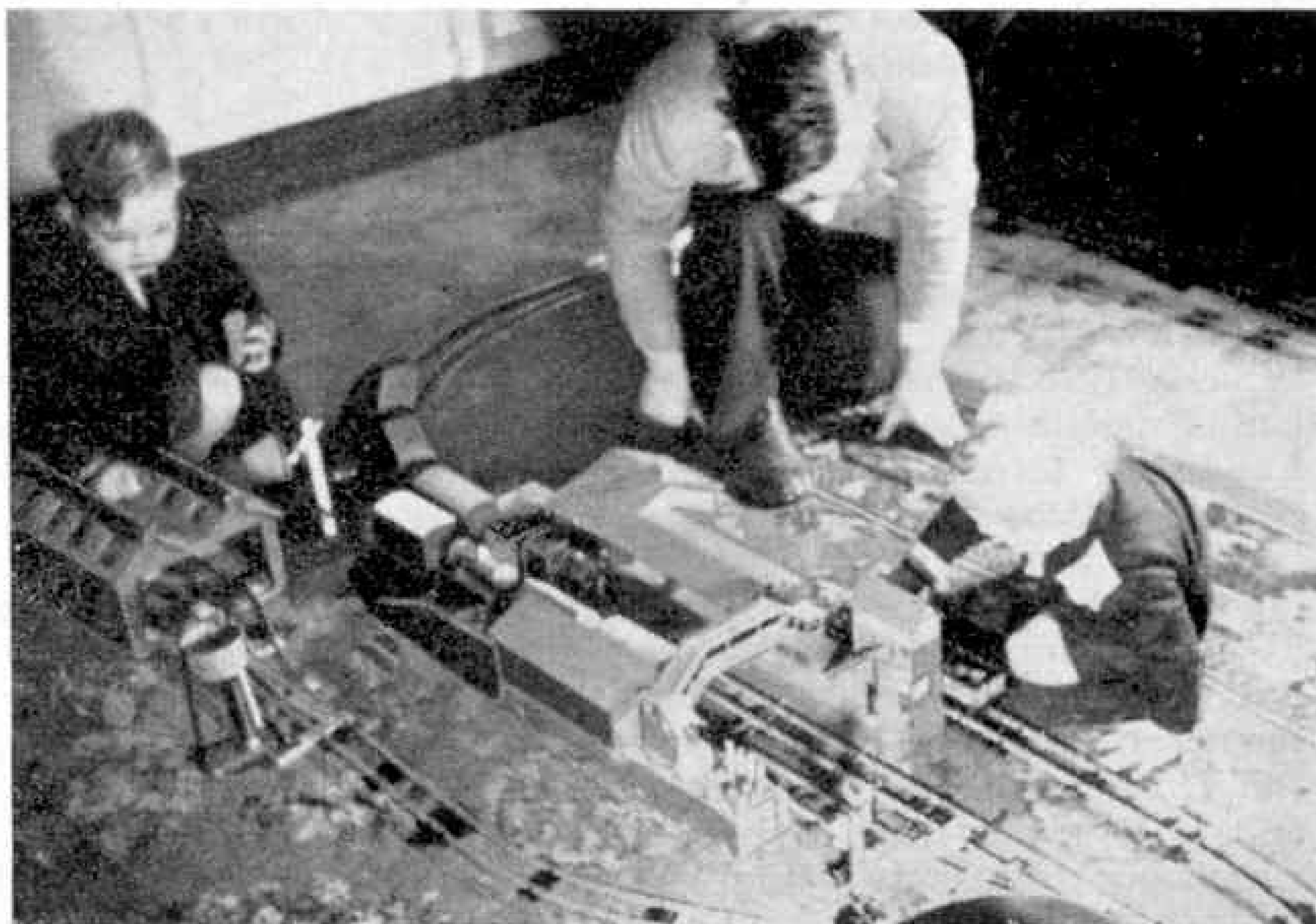
Alongside the passenger train mentioned previously there is a row of Low-Sided Wagons just coming into view at the left-hand side of the illustration. These are loaded with Dinky Toys army vehicles, and the whole represents a consignment such as one often sees in real life. Those of you who have not used any of your Dinky Toys military equipment in this way will be surprised at the fine effect a load of this kind produces.

In our second picture, you will notice another train of vehicles all of one kind. No. 50 Cattle Trucks in fact, and in this respect the formation is similar to the train of army vehicles in our first illustration. Your train working arrangements should include a cattle special now and again, and the interesting No. 50 Cattle Trucks are just the vehicles for this kind of job.

So to our third

who in company with their father, Mr. H. Newman, who takes an active interest in these matters, are obviously enjoying themselves. This is another railway on the floor. The photograph was taken some time ago and since then a good deal more equipment has been added. Even a house removal has not prevented exciting developments and at times there are different layouts in various rooms, all connected together. This means that train working of really interesting character can be carried out, as you can well imagine. An operator in each room is in complete charge of his "section".

Further lineside effects help to make the system more complete, as do numerous Dinky Toys motor vehicles that are used in conjunction with the railway.



These members of the Newman family, Petersfield, are keenly absorbed in train running on their Hornby Railway on the floor.



HERE are two very interesting pictures, both of them, with notes on their subjects, contributed by regular readers of the *M.M.*

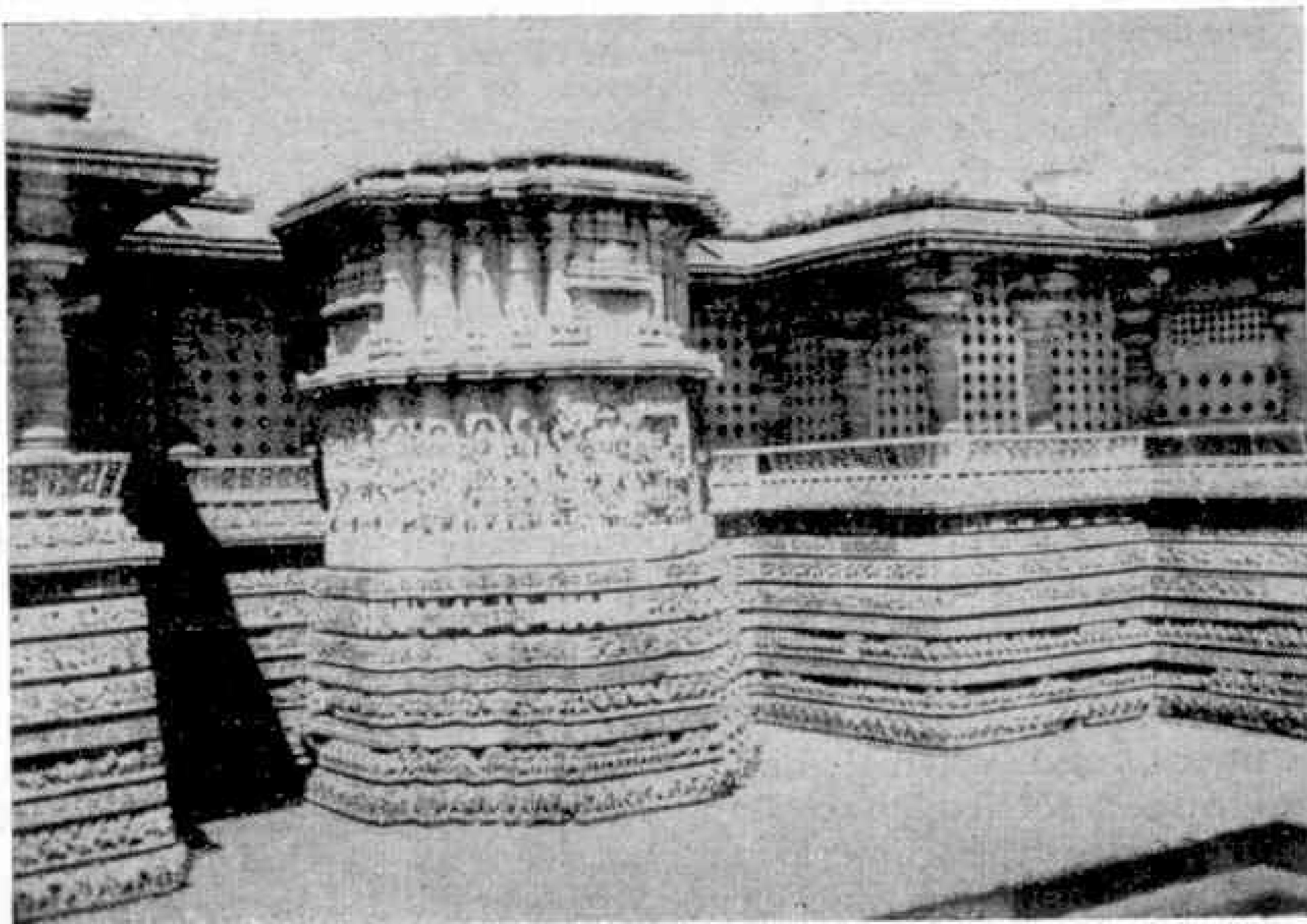
The first of these, from a photograph by C. T. Youll, Bloxwich, shows one of the famous "Cornish Castles", which fascinated him during his first visit to Cornwall. Derelict stacks and engine houses like those seen in the picture are a monument to the county's tin and copper industry, and also to the development of the steam engine. Tin was mined in Cornwall as early as the Bronze Age, and in the Middle Ages the riches of Cornish minerals were re-discovered, and mining again begun. In the eighteenth century almost the whole of the world's supply of tin came from Cornwall, but today the industry has practically ceased there.

One of the difficulties of tin mining in Cornwall was that as the shafts were sunk deeper water began to enter the mines. The invention of the

Of General Interest

steam engine, in which Newcomen and Watt played such great parts, made it possible to pump out the water. Ruins like the one illustrated here were once the homes of beam engines used for this purpose, but some mines also operated the Trevithick high pressure steam engine for hoisting the ore and for crushing and stamping it when on the surface. Their existence continues to remind us of the men who designed and built the earliest of our railway locomotives.

Turning now to the lower illustration on this page, here is a great contrast. The building shown, a very old one, is a temple at Belur, which is about 100 miles from Mysore, in Southern India. The temple is a masterpiece, exquisitely carved in black stone. Inside too there are amazing carvings that make the visitor wonder at the patience and craftsmanship of those who created such delicate work hundreds of years ago. The photograph, and the account of this wonderful temple, came from M. N. Radhakrishna, the Secretary of the Mysore Meccano Club, reports from which have often appeared in the pages of the *M.M.*





Nigerian Journey

By J. Wade

BABA, my cook-steward, was loading the pick-up as I finished breakfast. I had never been able to make one of those super-early starts that are supposed to be so advantageous to the tropical traveller, and I could see through the window that the Sun was preparing to take charge of the day.

Baba had only one fault; whenever I went "on tour" some particularly important item would be missing when we most wanted it. So I went outside to check. The pick-up was loaded to the tail-board. My iron bed was along one side, helping to hold two spare wheels. At the bottom, against the cab, was the tin trunk containing my clothes. Two "chop boxes" full of, I hoped, my bread, tinned stuffs, bacon, condiments and other necessities, were next to the trunk. The kerosene was near to the tail-board, and the kettle and pan close by. Through a gap I could see a small bag with potatoes and a few onions in it. The green canvas roll on the top of the trunk was my chair, table, wash-basin and bath.

All I wanted beyond these was my camera, and when I had fetched it we were soon settled, myself and Baba in the front, with the camera bag between us, and the "small boy" in the back with a small

cushion and a huge grin. Then, with that curious elation that "touring" always brought, I guided the pick-up out of the drive and headed north-west.

I had decided to tour in the Emirate of Borgu, in the Province of Ilorin. Ilorin is in the extreme south-west of the Northern Region of Nigeria, and Borgu is north of it, bounded on the west by Dahomey, and on the north and east by the great sweep of the Niger. Its chief town is Bussa, on the Niger, reached by road through Kiama, situated about half-

way. The road was often impassable during the rains because of the washing away of culverts and bridges, and the state of the laterite earth of which it was made.

Our way led us through Ilorin town, past the Emir's palace, the Emir's market and mosque, and then on to the laterite road into open country. I had planned to reach Kiama rest house in time for a quick lunch, but we arrived rather late. Twice I had tried to photograph a troop of monkeys crossing the road ahead of us, but each time they had fled chattering into the uncultivated "bush". When we arrived I contented myself with coffee from the flask, and a little bread with the tin of soup that had been under the dashboard. When opened this was quite warm enough to make

Here is the story of a tour of the Emirate of Borgu, in the north-east of Nigeria. The happy children seen in the picture at the head of the page were photographed in Babana, where white people are seldom seen, as they spun cotton. The author was followed by an ever-growing congregation of children during his stay in Babana.

a pleasant meal. There are some advantages in tropical travel!

After a wash with water from the rest house well, and the filling of the tank and cans with petrol from a drum I had sent forward, we nosed out of the rest house drive and turned northwards for Bussa. Apart from the occasional detour, where a bridge or culvert had been swept away by the rains and not yet repaired, the only occurrence of note was the passage across the road of a small herd of bush-cow, far too close for my liking. It was a frequent experience that animals, wild or domestic, would bolt across the path of one's car instead of alongside or away from it.

Between Kiama and Bussa, over the new bridge spanning the river Oli, is Wawa, the town where Clapperton the explorer and his servant Lander stayed when they travelled to meet the Sultan Bello of Sokoto during their second

expedition. Lander had difficulty in leaving, for a rich widow of the little town fell in love with him, and tried to keep him there.

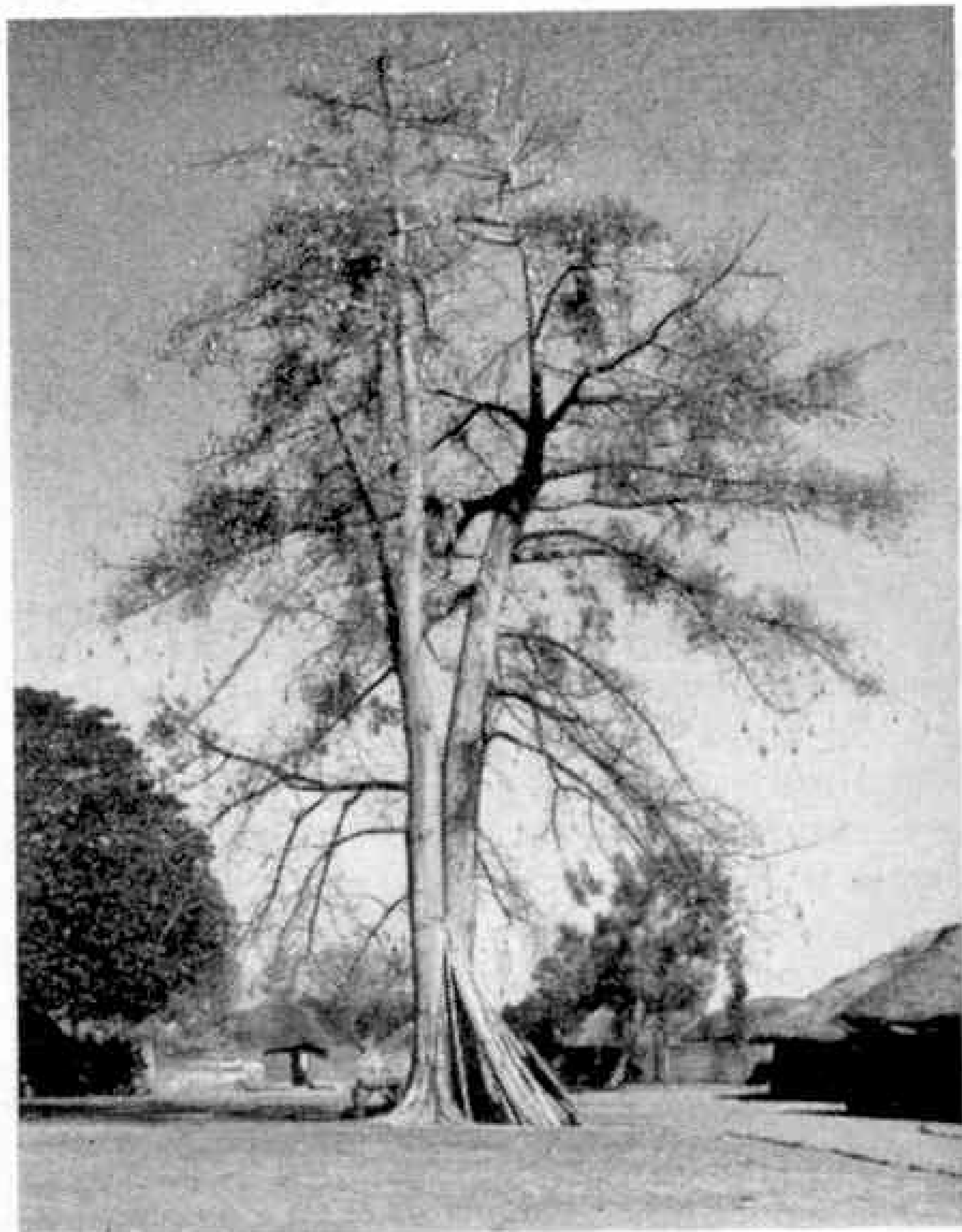


The head of a Gungawa village addresses his local ju-ju.

Bussa is inevitably associated with the great explorer Mungo Park, who endured such incredible hardships to discover the true direction of the fabulous River Niger. He met his death in the hour of his triumph while making the journey on the great river southward with his depleted party. He was killed near Bussa, and the present Emir has a medallion, made into a ring, which is said to have belonged to Mungo Park.

We reached Bussa in the late afternoon, when the sun had turned a golden yellow, and the quiet was broken only by the barking of pi-dogs as we passed. The rest-house keeper was plainly annoyed to see us, and beat a hasty retreat after unlocking the doors. I soon found out why; there was neither wood for the fire nor water for the bath. When we unloaded I found that the only bread that Baba had packed was the little I had already eaten, with my soup at Kiama. I draw a curtain over the events of the next two hours. Part bathed, part fed, and thoroughly out of temper, I eventually retired to bed to await the trials of the morning.

The following day I was about early, making arrangements to visit Babana, nearly in Dahomey, and places en route. I needed the services of the Native Authority Inspector, both to assist in the work and to act as interpreter. I also sought information as to the state of the road, which was a cleared track through the bush, made up



A fine silk cotton tree, a tall tropical forest tree of Africa and Asia. The "cotton", which lines the inside of the fruit, is kapok.



The riverside at Bussa, a town on the banks of the River Niger.

with the best earth available for the job. I learned that no car had yet used it that season, but that it was thought to be passable.

With Baba, the small boy and the Inspector, I reckoned that we could get out of any trouble we might run into. I arranged the official business and took a quick look at the riverside market. When the road we had used from the south was impassable, the market was pretty dead. Now, however, it was very much alive. Lorries were being loaded with goods from farther north and from across the river. Salt, which had been brought in by road, was going into canoes to be carried in the opposite direction. Time was short, however, and before long I picked up the Inspector and returned to the rest house.

There I found everything ready; a minimum of clothing and kitchen utensils, the spare petrol, my bed, bath, etc., were all I intended to take. Baba announced that nothing could be done about bread, and I resigned myself to the inevitable. I had once lived for three days on stewed local beef and onions, after acquiring a holed sump, and this was nothing so bad as that.

Our way took us directly north, into the sparser Sudan Savannah, and we travelled parallel to the river. To our east were several waterside villages, many quite large, inhabited by the pagan Gungawa and Lupawa, riverain tribes whose origins seem a little obscure. We visited one of these villages, with its square houses and corn stores. I photographed the Village Head, who appeared also to be the "priest". The chief "juju" seemed to be a meteorite, in

a container held in a forked stick, which was planted in the ground. Nearby was a collection of cooking pots in which Pito, or grain beer, was being prepared.

Shortly after leaving the village we turned due west. The bush got thicker as we went along, and here, it seemed, was Sudan Savannah in its virgin state. Only two small hamlets were passed in over 50 miles, but the road was never too difficult. It was like travelling in a deserted land, and I was glad of the confidence I felt in the pick-up.

At Babana conditions were very different. Strangers were not frequent, and white ones particularly rare. Every move, every gesture, every word was commented on by a growing congregation of children. Later on, when I had a meal, it seemed almost mean to deprive them of the pleasure of watching me eat. Business took most of the day, but was eventually over in the late afternoon, when the light was mellowing and the air was getting just a little easier to bear. The District Head arranged an inspection of a farm growing cotton, consisting, as usual, of a burnt and cleared portion of bush some way out of the town. He also put on show his musicians, and a bevy of school-girls spinning cotton, so that I could get some photographs. One delightful result was the happy picture on page 194.

It was quite dark when we parted; I to take a bath and a dinner of Heinz "Sausage and Beans", and they to domestic affairs that were mysteries to me. That night I went to bed in the mud rest house, with thatch roof and earth floor, and eventually slept to the accompaniment of the inevitable drums and the fitful barking of dogs.

A Jolly Voting Competition

IN the panel on the right will be found a list of 12 parts selected from the complete Meccano range. Competitors are asked to study the list carefully and then, A, to choose the part that they personally think is the most useful and that can be used in the greatest variety of ways in model-building; and B, list in order of popularity the four parts that they think will receive the most votes when the "A" votes of all competitors are added together.

When they have made their final selections, competitors must write the names of the parts, together with their Meccano catalogue numbers, in the manner explained above, *on a postcard*, which must also bear their full name and address.

The prizes will be awarded to the competitors who succeed in correctly forecasting the four parts that will receive the highest votes. If no competitor succeeds in placing the four parts in the correct order the prizes will be awarded to the competitors whose entries are most nearly correct, in order of merit. The Contest is open to competitors of all ages.

The prizes are as follows:—First, Cheque for £2 2s. 0d.; Second, Cheque for £1 1s. 0d.; Third, P.O. for 10s. 6d. There will also be a number of consolation prizes.

Entries must be written on *postcards only* and no competitor may submit more than one entry. Care must be taken to see that the sender's name and address is written clearly on the postcard. Entries should be addressed *Meccano Parts Voting Contest, Meccano Ltd., Binns Road, Liverpool 13.* Closing date: 30th April 1959.

"MOST USEFUL MECCANO PARTS" VOTING CONTEST

Select your Parts from this List

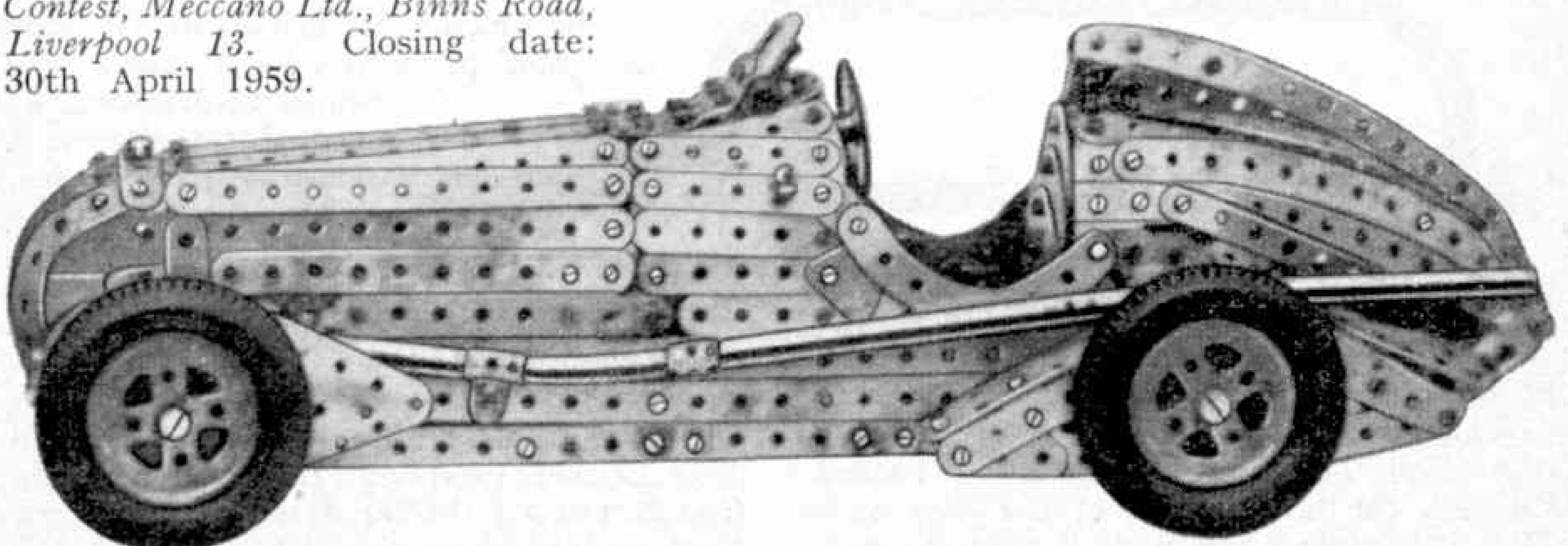
| | | | | |
|-----|----------|------|-----|----------------------|
| 1. | Part No. | 10 | ... | Fishplate |
| 2. | " | 22 | ... | 1" Pulley with boss. |
| 3. | " | 11 | ... | Double Bracket. |
| 4. | " | 163 | ... | Sleeve Piece. |
| 5. | " | 137 | ... | Wheel Flange. |
| 6. | " | 133 | ... | Corner Bracket 1½". |
| 7. | " | 64 | ... | Threaded Boss. |
| 8. | " | 109 | ... | Face Plate. |
| 9. | " | 24 | ... | Bush Wheel. |
| 10. | " | 62 | ... | Crank. |
| 11. | " | 59 | ... | Collar. |
| 12. | " | 126A | ... | Flat Trunnion. |

A Competition Reminder

The "Winter" General Model-Building Competition is still open, but those who have not yet sent in their entries should get busy as soon as possible, as the closing date is 30th May. Models of any kind or size may be entered, and entries, which must consist of photographs or drawings only, should be addressed to *Winter General Model-Building Competition, Meccano Ltd., Binns Road, Liverpool 13.* Competitors should take care to write their names and addresses on the back of each photograph or drawing sent in.

Cash prizes will be awarded for the best models submitted and details of these have already been given in the February and March issues of the *Meccano Magazine*.

In addition to the actual prizes a number of Certificates of Merit will be awarded in recognition of their efforts to those competitors whose models fall just short of prize-winning standard. These and all other prize-winners will be notified by letter as soon as possible after the closing date, and the complete list of awards will be included in the *Meccano Magazine* in due course.



A well-built model racing car that won a prize for A. Cole, Broadchalk, nr. Salisbury, in a previous "Meccano Magazine" model-building competition.

Among the Model-Builders

By "Spanner"

A Hacksaw for The Model-Builders Workshop

Useful tools, built entirely of Meccano parts, have previously been dealt with from time to time in these pages. Yet another instance of the practical uses of Meccano is the Hacksaw Frame shown in Fig. 1. This is built up from two $9\frac{1}{2}$ " Strips, outside which are two $7\frac{1}{2}$ " Strips. Curved Strips are bolted at the ends of the $9\frac{1}{2}$ " Strips, and Washers are placed between them to make them rigid.

At the outer ends of the Curved Strips 2" Strips are bolted, and each pair of the latter carries a Coupling that is fixed by bolts inserted through the Strips and screwed into the tapped bores. A Rod is passed through the Coupling at one end and carries a Wood Roller fitted between two 1" Pulley Wheels to form a handle. A Strip Coupling is carried on the inner end of the Rod to hold one end of the hacksaw blade, the other end of which is held in another Strip Coupling secured to a Screwed Rod.

Steering Column Gear Change (Fig. 2)

Two Cranks 1 and 2 are each bolted to a 1" Triangular Plate by $\frac{3}{8}$ " Bolts 3 and 4. The Bolts hold four Washers on their shanks between the bolt head and the Triangular Plate. A second $\frac{3}{8}$ " Bolt 5 is fixed similarly

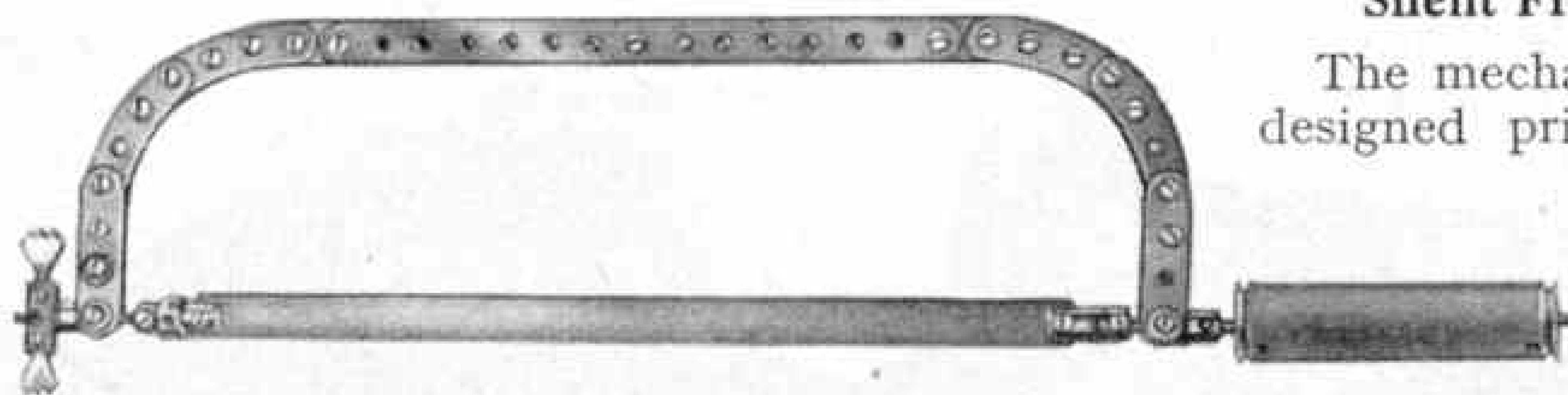


Fig. 1. A useful Hacksaw Frame, built from Meccano parts.

in one of the other holes in each of the 1" Triangular Plates.

A Rod of suitable length is passed through the hole in one of the lugs of a $1\frac{1}{2} \times \frac{1}{2}$ " Double Angle Strip 6, then through the Boss of the Crank 1 and a 1" Triangular Plate, and then through the Collar 7, the

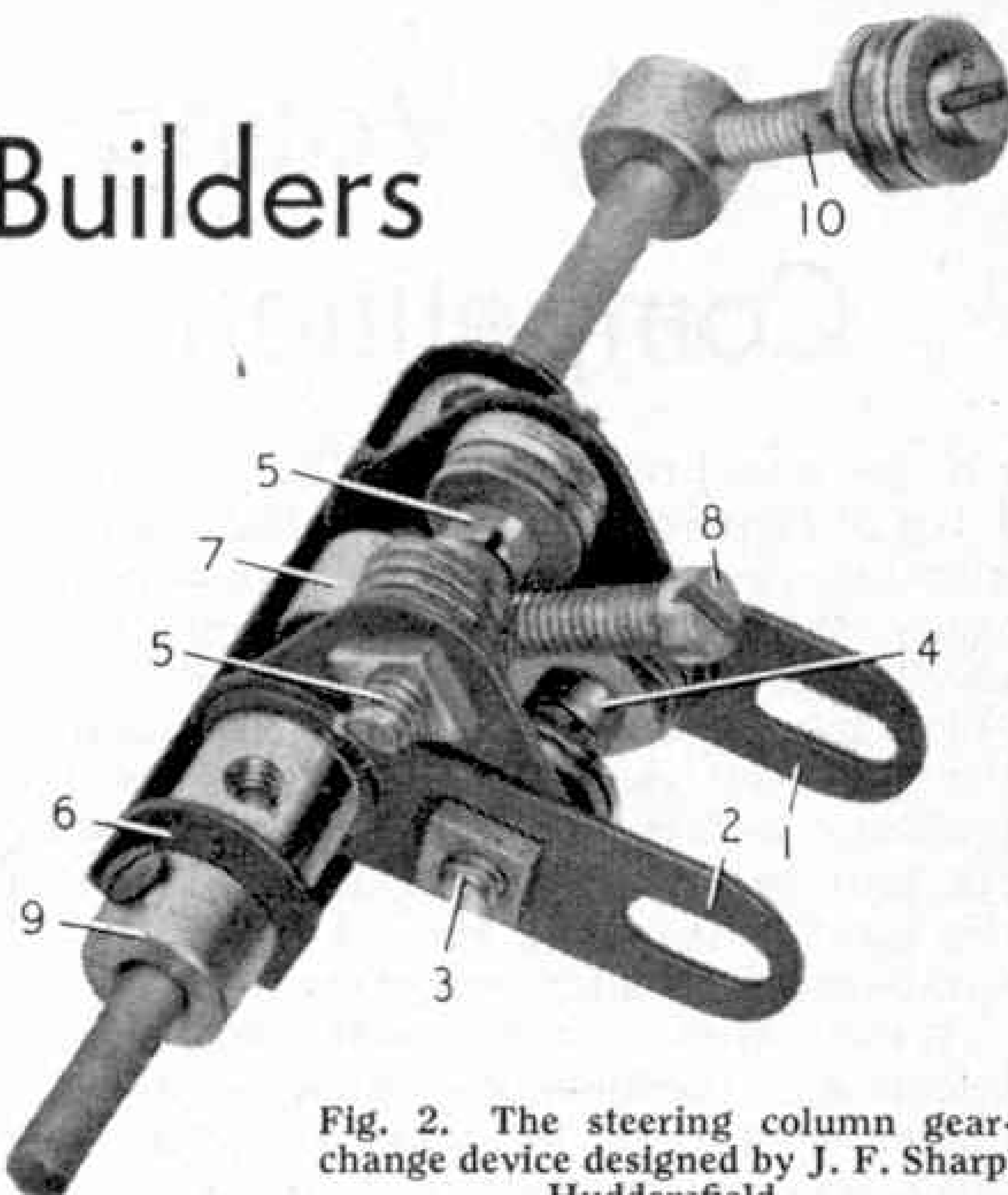


Fig. 2. The steering column gear-change device designed by J. F. Sharp, Huddersfield.

Crank 2 and finally through the second lug of the $1\frac{1}{2} \times \frac{1}{2}$ " Double Angle Strip. All these parts, except the Collar 7, are free to rotate on the Rod, but the Collar is fixed to the Rod by a $\frac{3}{4}$ " Bolt 8. The other parts are prevented from sliding off the Rod by a Collar 9. The gear change lever is a $\frac{3}{4}$ " Bolt 10 to which are fixed four Washers.

Four positions can be obtained with this gear change. When in use in a model the Cranks 1 and 2 are connected to the selectors of the gear-box. When the gear change lever is pulled upwards the Bolt 8 engages between the upper $\frac{3}{8}$ " Bolts and Washers and by turning the lever in either direction two positions are obtainable. Similarly, if the Bolt 8 is pushed down and sideways two more positions can be obtained.

Silent Free Wheel Mechanism

The mechanism shown in Fig. 3 is designed primarily as a silent free wheel mechanism, but it operates also as a one way drive device, disconnecting the drive if its direction is reversed.

The driving shaft is a Screwed Rod 1 mounted in suitable bearings and held in place by Collars. A Threaded Boss 2, fixed in a Socket Coupling, is screwed on to Rod 1, and a 1" Pulley fitted with a Motor Tyre is locked in the other end of the Socket Coupling.

The driven shaft 3 is a Rod mounted in

line with the Screwed Rod 1. A Compression Spring located between a Collar and one of the bearings for Rod 3 presses a $1\frac{1}{8}$ " Flanged Wheel against the Motor Tyre.

When the Screwed Rod 1 rotates in an anti-clockwise direction, the inertia of the Socket Coupling assembly prevents it from turning at the same speed as the Rod, and the Threaded Boss moves the assembly until the Motor Tyre engages the Flanged

are linked together by two Fishplates 4 and 5 and two bolts are screwed into their bosses. The purpose of the Washers 6 is to stop the bolts from touching the Rod so that the Face Plate can slide freely on the Rod. The Face Plate is free to slide on the Rod whereas the Collar 3 is fixed.

The output shaft is a slidable Rod 7, which carries two Collars 8 and a 1" Pulley fitted with a

Rubber Ring that is in contact with the Face Plate. The position of the 1" Pulley can be altered slightly to get a different ratio.

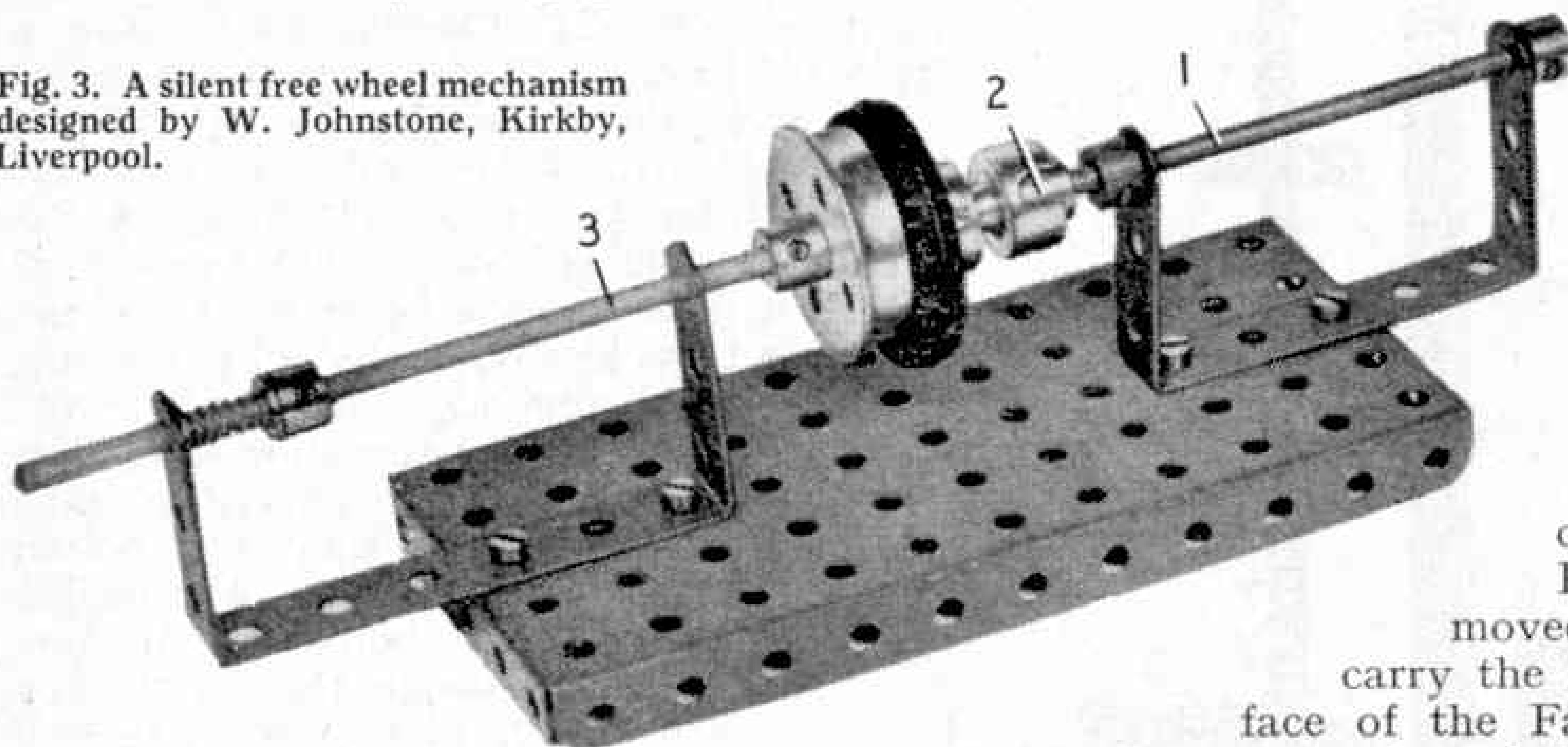
The sliding shaft carrying the 1" Pulley can be

moved endways so as to carry the Pulley across the face of the Face Plate, by an arrangement consisting of two Rods 9 and 10 coupled together by a Coupling, which in a car would represent the accelerator pedal. The short Rod 10 is fitted with a Compression Spring as shown. A 1" Rod held in a Coupling 11 engages between the Collars 8 in the Rod 7.

When the accelerator is pushed inward the speed of the output shaft increases as the ratio between the circle of contact between the rim of the Tyre and the Face Plate increases.

It is possible to modify the constructional details of this mechanism in various ways to suit the parts available to the builder.

Fig. 3. A silent free wheel mechanism designed by W. Johnstone, Kirkby, Liverpool.



wheel and completes the drive to Rod 3. If the speed of rotation of Rod 3 exceeds that of Rod 1 the action of the Screwed Rod withdraws the Motor Tyre from the Flanged Wheel and disconnects the drive. A similar action takes place if the rotation of Rod 1 is reversed.

Variable Speed Friction Drive

C. J. Somerfield, Finchley, London N.3, sent me details of a friction drive mechanism that he suggests could be used as an accelerator for a model car, but I think it is rather too bulky to be really satisfactory for this purpose. The mechanism is really a variable speed drive and as it has other uses in model-building I am including an illustration and details of it herewith. The device is shown in Fig. 4.

The input shaft 1 is journaled in a $3\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strip and a $3\frac{1}{2}$ " Strip 2. A Compression Spring is placed on the shaft between the Collar 3 and a $2\frac{1}{2}$ " Face Plate. The Collar and the Face Plate

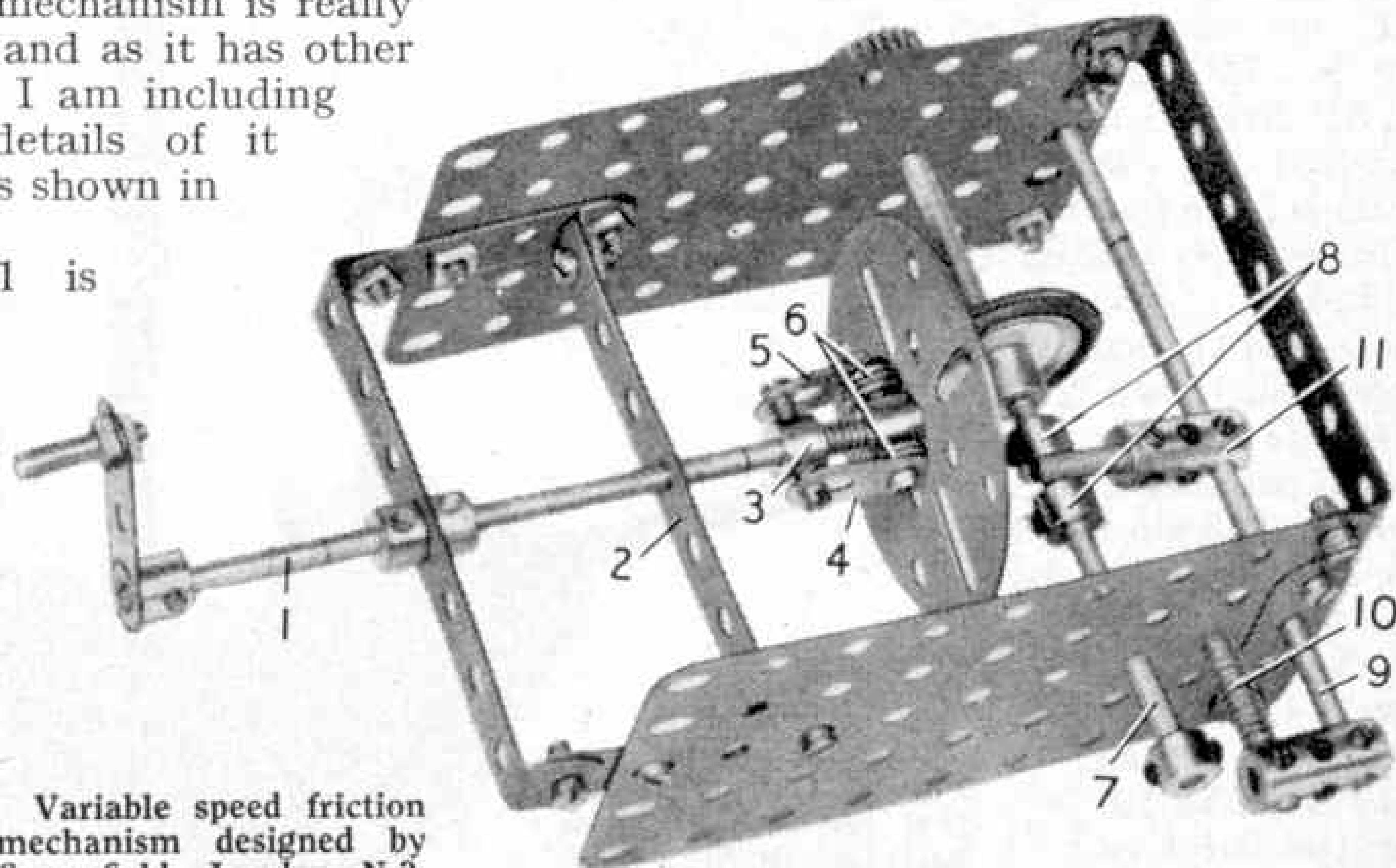
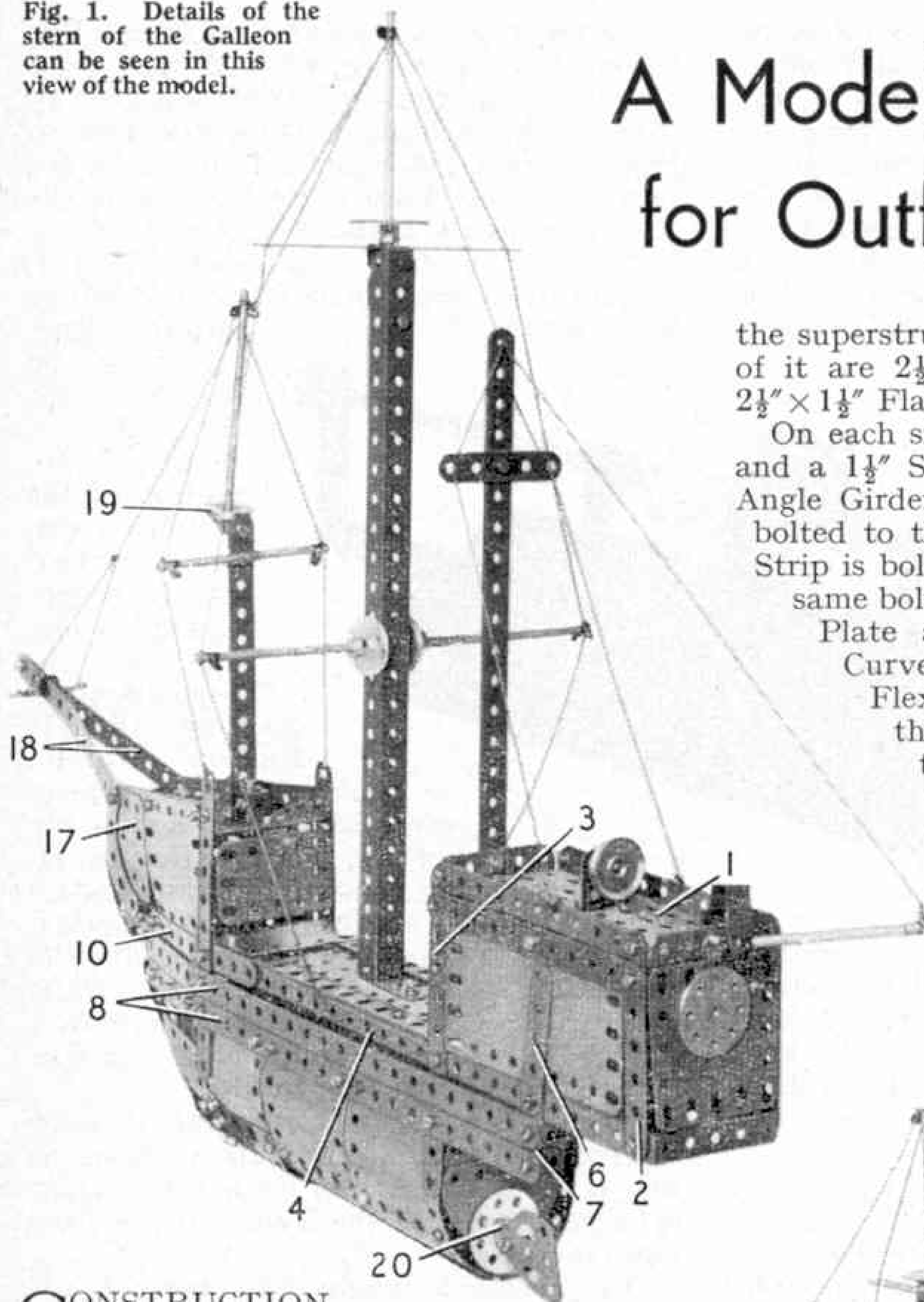


Fig. 4. Variable speed friction drive mechanism designed by C. J. Somerfield, London N.3.

Fig. 1. Details of the stern of the Galleon can be seen in this view of the model.

A Model Galleon for Outfit No. 5



the superstructure. The fore and aft ends of it are $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plates and a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flanged Plate forms the decking.

On each side of the vessel a $2\frac{1}{2}''$ Strip 6 and a $1\frac{1}{2}''$ Strip 7 are bolted to the $12\frac{1}{2}''$ Angle Girder and two $12\frac{1}{2}''$ Strips 8 are bolted to the $1\frac{1}{2}''$ Strip. The lower $12\frac{1}{2}''$ Strip is bolted to the $5\frac{1}{2}''$ Strip 3 and the same bolts also hold a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate at one side and a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Curved Plate at the other side. The Flexible Plates are curved to shape the hull and they are bolted together. A $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate is bolted along one side inside the hull. The hull plating is completed with two $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Curved Plates and two $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plates 9. The keel consists of a $2\frac{1}{2}''$ and a $5\frac{1}{2}''$ Strip.

A $5\frac{1}{2}''$ Strip 10 extends each of the $12\frac{1}{2}''$ Angle Girders 4 forward, and a vertical $5\frac{1}{2}''$ Strip 11 is held by the same bolt. This Strip is bolted also to the $12\frac{1}{2}''$ Strips of the sides, which are joined by two Trunnions at the fore

CONSTRUCTION

of the model Galleon shown in Figs. 1, 2 and 3 is commenced with the building of the aft superstructure. To one end of a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate 1 a $3\frac{1}{2}''$ Strip 2 is bolted at each side, and at the other end two $5\frac{1}{2}''$ Strips 3 are fixed. A $12\frac{1}{2}''$ Angle Girder 4 is bolted to these Strips on each side and the same bolts hold also two $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips that connect the sides of the Galleon together. A $5\frac{1}{2}''$ Strip 5 is bolted parallel to the deck on each side, and two $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plates are used to fill in the sides of

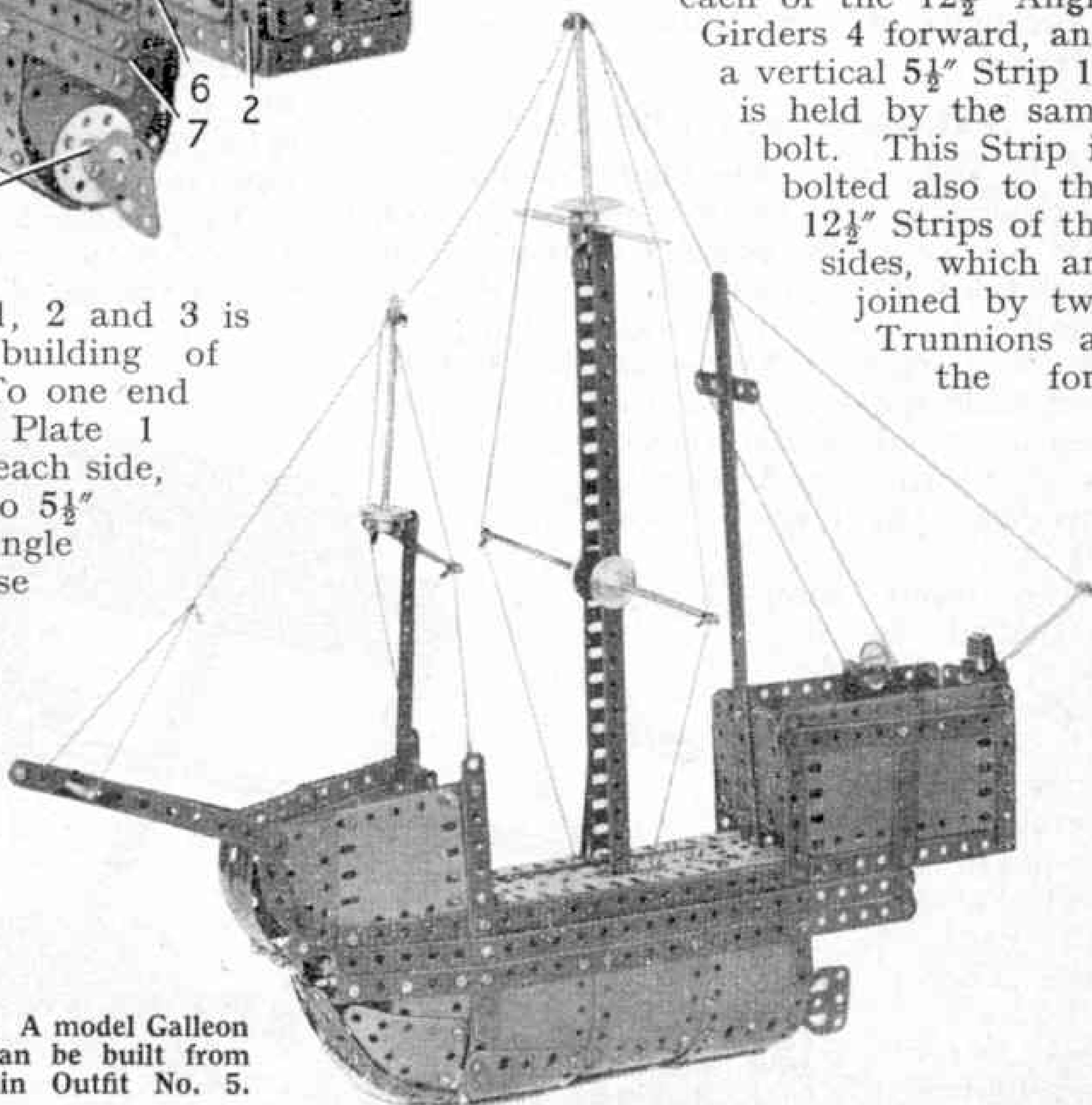


Fig. 2. A model Galleon that can be built from parts in Outfit No. 5.

end. One of the Trunnions is seen at 12. The $5\frac{1}{2}$ " Strips 10, which extend the $12\frac{1}{2}$ " Angle Girders, are joined by a $1\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strip 13, to which is also bolted three Formed Slotted Strips to form the head of the ship. The prow consists of three $2\frac{1}{2}$ " Strips slightly curved and a fourth Formed Slotted Strip 14. Two $2\frac{1}{2}$ " \times 2 " Triangular Plates 15 and the ends of a $5\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plate 16 fill in the sides of the bow. The Plate 16 is bolted arch fashion across the hull.

The deck of the fore-castle is a Flanged Sector Plate bolted to the $5\frac{1}{2}$ " Strips 11. $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Triangular Plates 17 are bolted to the Flanged Sector Plate on each side as well as a Stepped Curved Strip and a $5\frac{1}{2}$ " Strip 18.

The $5\frac{1}{2}$ " Strips are bolted together at their outer ends to form the bowspit. Each side of the fore-castle is filled in by a $2\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plate and its aft end by a $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plate.

The midships deck is made up mainly of a Flanged Sector Plate, which is bolted to the $12\frac{1}{2}$ " Angle Girders, and the main mast is connected to the deck by a 1 " \times 1 " Angle Bracket and a $\frac{1}{2}$ " \times $\frac{1}{2}$ " Angle Bracket. The fore and aft masts respectively consist of two $5\frac{1}{2}$ " Strips and two $12\frac{1}{2}$ " Strips. The fore mast is lengthened by a $4\frac{1}{2}$ " Rod, which is held in the boss of a 1 " Pulley 19. The construction of the main mast from two $12\frac{1}{2}$ " Angle Girders can be seen clearly in

Fig. 3 and it is topped by a 5 " Rod journalled in a Double Bracket and a Double Bent Strip, which are bolted to the Angle Girders. The upper cross-spar is a $5\frac{1}{2}$ " Strip and the lower one consists of 5 " and $3\frac{1}{2}$ " Rods joined together by a Rod Connector.

The ship's wheel is a 1 " Pulley locked on a Threaded Pin passed through a 1 " \times 1 " Angle Bracket bolted to the deck. A $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plate, a Semi-Circular Plate and a Wheel Disc,

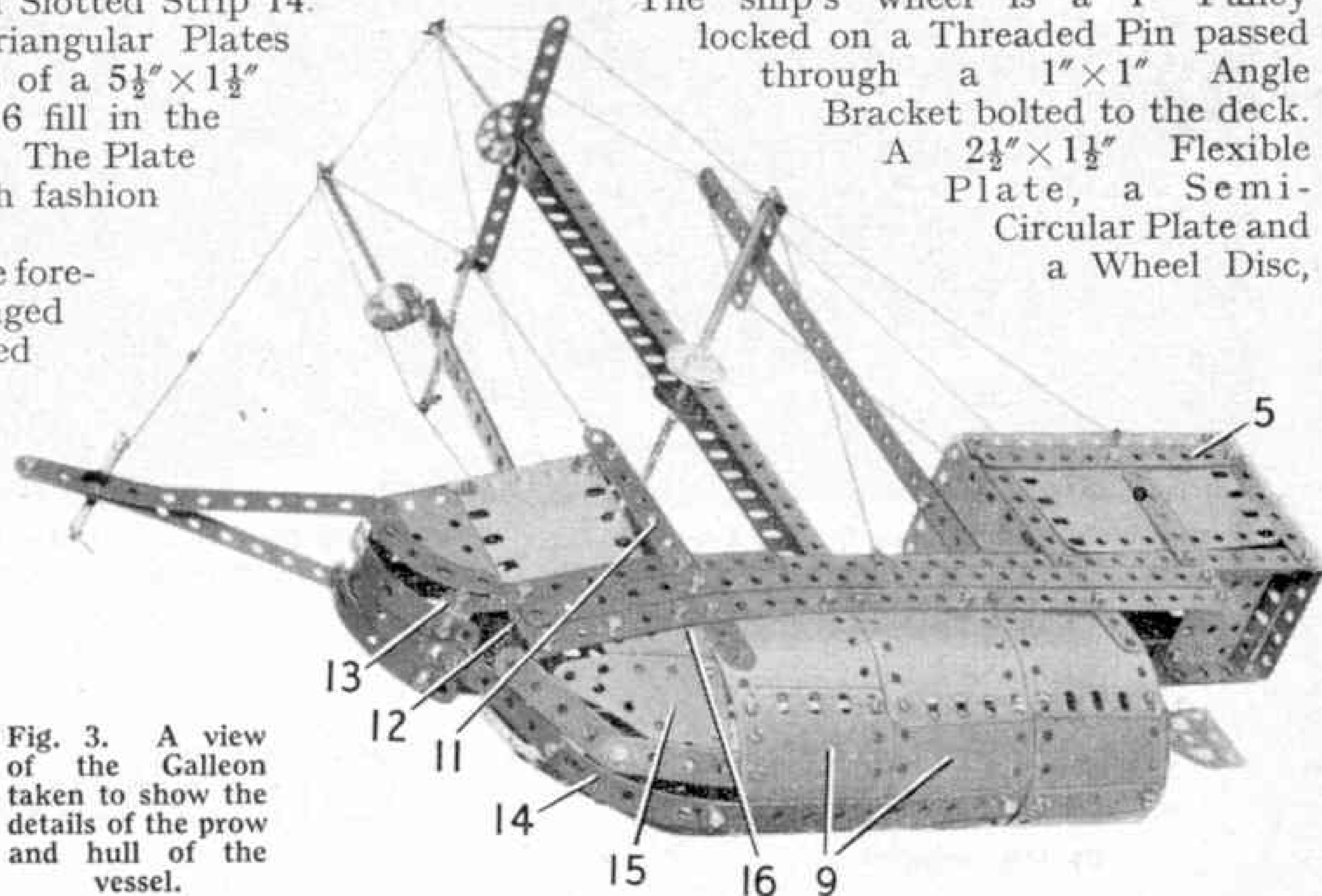


Fig. 3. A view of the Galleon taken to show the details of the prow and hull of the vessel.

fill in the stern part of the hull, and the rudder is a Flat Trunnion bolted to the Angle Bracket 20.

The arrangement of the rigging is shown quite clearly in the illustrations.

Parts required to build the model Galleon:—6 of No. 1; 14 of No. 2; 2 of No. 3; 9 of No. 5; 2 of No. 6a; 4 of No. 8; 3 of No. 10; 1 of No. 11; 4 of No. 12; 2 of No. 12a; 2 of No. 12c; 2 of No. 15; 1 of No. 15a; 3 of No. 16; 1 of No. 17; 4 of No. 22; 1 of No. 24; 2 of No. 24a; 10 of No. 35; 115 of No. 37a; 109 of No. 37b; 10 of No. 38; 1 of No. 40; 1 of No. 44; 1 of No. 45; 1 of No. 48; 3 of No. 48a; 1 of No. 51; 1 of No. 52; 2 of No. 54; 2 of No. 90a; 4 of No. 111c; 1 of No. 115; 2 of No. 125; 2 of No. 126; 2 of No. 126a; 1 of No. 176; 4 of No. 188; 2 of No. 189; 4 of No. 190; 2 of No. 191; 3 of No. 193; 2 of No. 199; 2 of No. 200; 1 of No. 212a; 1 of No. 213; 1 of No. 214; 4 of No. 215; 2 of No. 221; 2 of No. 222.

"POWER AND SPEED"

(Temple Press 10/6d. each)

Four volumes of the new *Power and Speed* series of the Temple Press have reached us. Each contains a comprehensive account of its subject, with excellent illustrations, and they are described as written by specialist authors for intelligent boys between the ages of 10 and 16.

Naturally we turn first to the volume on *Locomotives*, by Brian Reed. Here is a topic that will never lose its romantic appeal, even if diesel and electric engines do replace the old steam favourites. The author does not confine himself to descriptions of locomotives of all types, but contrives to give his readers also an excellent general picture of the railways on which they run.

Another volume in the series is *Ships and Ship-*

building, by J. A. Hind, and every boy who is interested in ships should read it for the variety and extent of the information that he will find in it. Any ship lover indeed will have a much finer appreciation of the ships of ocean transport if he takes the trouble to read this excellent book.

Aircraft and Air Power, by F. G. Swanborough, and *Motorcars*, by P. A. Turner, are fully up to the standard of the two volumes already referred to. The former is published in association with *The Aeroplane*, and the latter with *The Motor*, to the staffs of which their respective authors belong. So it can be taken for granted that their contents are authentic and in each case there is a really fascinating story, one that will satisfy the needs of all boys, and indeed many grown-up people, who are interested in the forms of transport concerned.



Some members of the 4th Dundee Company Boys' Brigade with their Hornby-Dublo layout when on display at Phins Ltd., Dundee. Photograph by John Leng & Co. Ltd.

HORNBY RAILWAY COMPANY

By the Secretary

"On Show"

I HAVE noticed in correspondence that, as *Layout Man* remarked in the February *M.M.*, increasing use is being made of Hornby-Dublo layouts for exhibitions and display purposes by enthusiasts. Sometimes these shows form part of a social, school, or parish function and there is little doubt that a well-run layout is a wonderful attraction and provides plenty of entertainment in such circumstances. A good display and train running programme is invariably a feature of H.R.C. Branch "Open Nights," or Exhibitions, but in these instances the layout is usually a more or less permanent one and represents a joint effort on the part of all the members. What I have in mind particularly in this talk is the kind of show that is put on by a single enthusiast or, more often, two or three working together.

Those Hornby-Dublo owners who have done this sort of thing once or twice usually gather sufficient experience to guide them on future occasions, but I am sometimes asked for advice by those who have undertaken to put a miniature railway on display; hence the selection of this subject for our talk this month.

It is for this sort of thing that the layout that is mounted on its own baseboard and

movable either complete, or in sections, is so useful. The site can be prepared in advance and the railway quickly installed and connected up for working. Where the railway has its own supporting structures these may be portable too, and it is certainly an advantage if they are. Otherwise some means of raising the layout baseboard to a convenient height for operating and for viewing will have to be provided. If the display is arranged in a school, desks are often pressed into service for this purpose, a more enjoyable one to most youngsters perhaps than their normal use.

If the rails have to be laid down on the site for some reason, it is well to remember that the general scheme should be basically simple. It will be easier to operate and visitors will be able to follow what is going on far more readily. Needless to say the track laid for such purposes must be beyond reproach and it is important that wiring and connections should be efficiently made. Above all, do not have a tangle of wires. Take care that each lead is fixed neatly and unobtrusively in position where there is little or no chance of its getting in the way. Better still, carry all wiring under the base, if you can.

As a rule the Hornby-Dublo owner who

looks after his equipment need have no fears about its performance when on display. A railway that works well at home should do so when on show, but obviously track, locomotives and rolling stock must be in first class order before working begins. The amount of maintenance given during the time the railway is on display will depend on the duration of the show itself. Where several engines are available, this is a help, not only from the traffic working point of view, but also because each can run in turn, more or less, so that none is on the go for the whole time continuously.

In such conditions Hornby-Dublo locomotives that are properly looked after can be expected to work throughout the day without trouble. Naturally each engine will be rested from time to time as the result of operating arrangements. For demonstration purposes it is better to have a simple operating scheme, with no long breaks between movements. It is a golden rule to have at least one train on the move at every moment.

As a rule, in Exhibition conditions the atmosphere is liable to be dusty, so that the track may soon tend to accumulate the type of "muddy" deposit with which most of you will be familiar. If the railway is to be used on several successive days, track cleaning should be undertaken well before starting time each morning, but if it tends to become oily in the course of running then a quick wipe over may be necessary during the day.

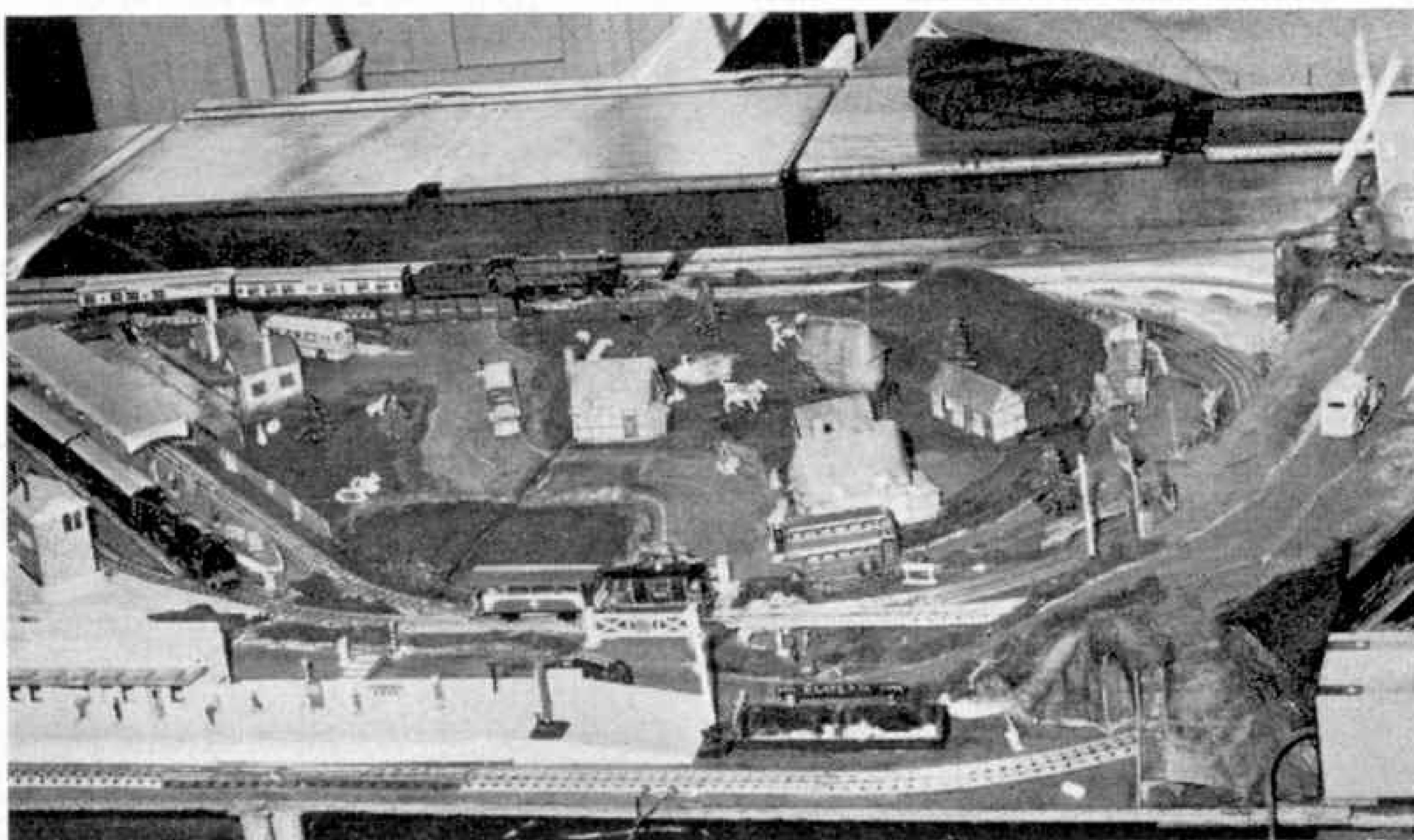
Rolling stock that is well run in should not require any particular attention after

initial oiling, but couplings should be checked so that there are no hitches in the programme when coupling and uncoupling operations have to be carried out, and see that the ramps of the uncoupling rails are clean and working properly.

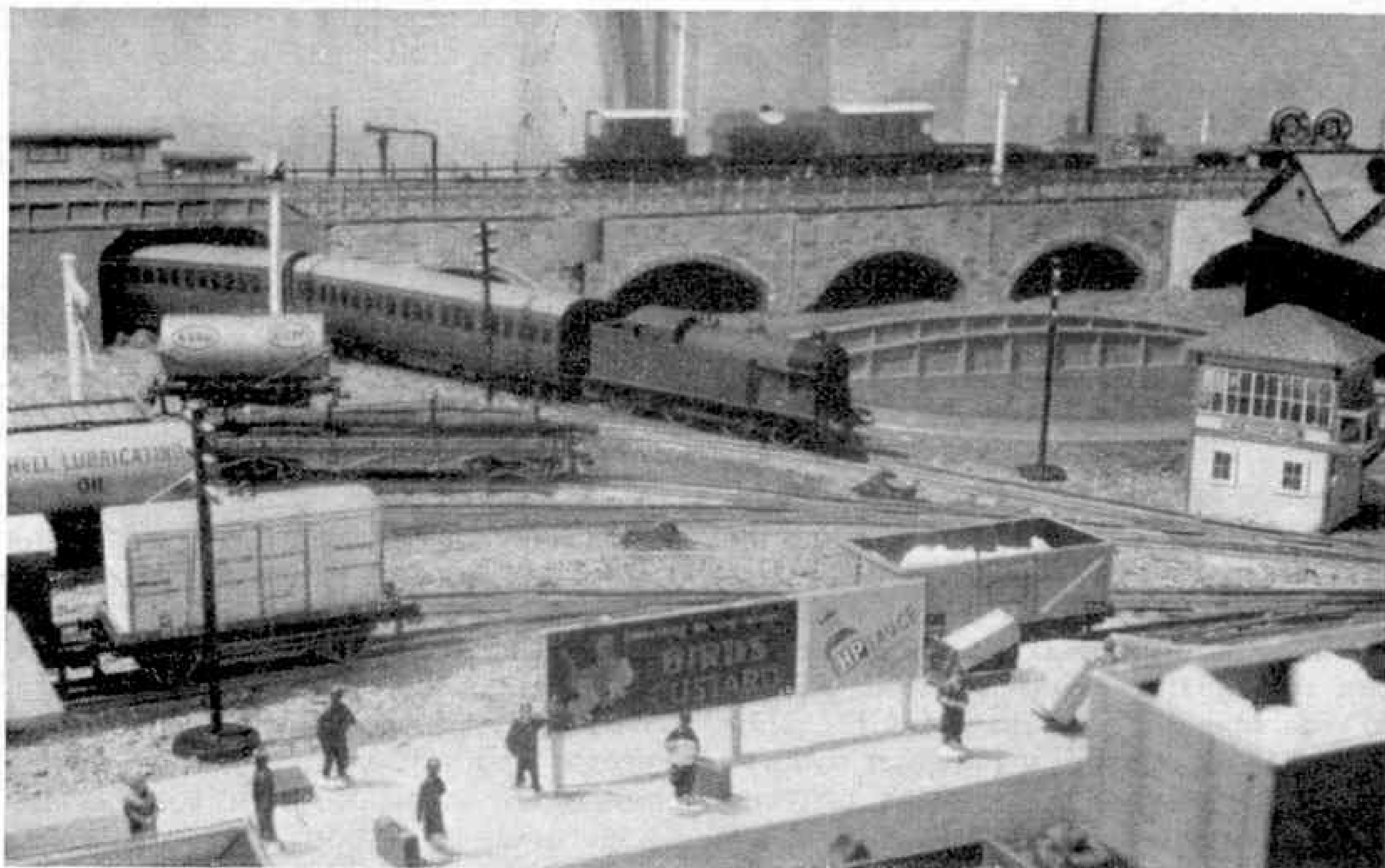
The normal locomotive maintenance of cleaning and oiling, as detailed in the relative instruction booklets, should be undertaken each day, but if several engines share in the duties it may be possible to arrange matters so that each one has its turn every other day. It all depends on the conditions of your particular show.

In view of these notes I am sure that you will find the accompanying pictures of interest. Notice how the members of the 4th Dundee Company of the Boys' Brigade have their layout well protected by a barrier round it. You will certainly have a crush around your railway, and some onlookers may press in too far in their eagerness to follow the trains, so this precaution is really necessary.

In the illustration on this page, showing the *Ingrebourne Valley Railway* operated by Mr. F. C. Spence, of Hornchurch and his son at a School Bazaar, you will notice here that good use was made of desks to enclose the railway and the operators. On this particular occasion a simple, but well-organised programme of operations was prepared and run through so successfully that a repeat performance has been requested, and there is the possibility of a miniature railway circle or club being formed at the School where the demonstration was given.



The Hornby-Dublo "Ingrebourne Valley Railway" layout of Mr. F. Spence and his son on display at a School Bazaar.



A realistic view across the centre of the Hornby-Dublo layout operated by R. E. Goodall and two friends, of Newark. The arched viaduct in the background is splendidly effective.

A Fine Joint Railway

AS we have seen previously in these pages, good railways often result from the teamwork of two or possibly more Hornby-Dublo railway owners who have had the brilliant idea of running a joint system. This is certainly the case with the railway illustrated on these pages, which is owned and operated by *M.M.* reader R. E. Goodall, of Newark, the principal partner in the system shown, and two of his friends who also have contributed material.

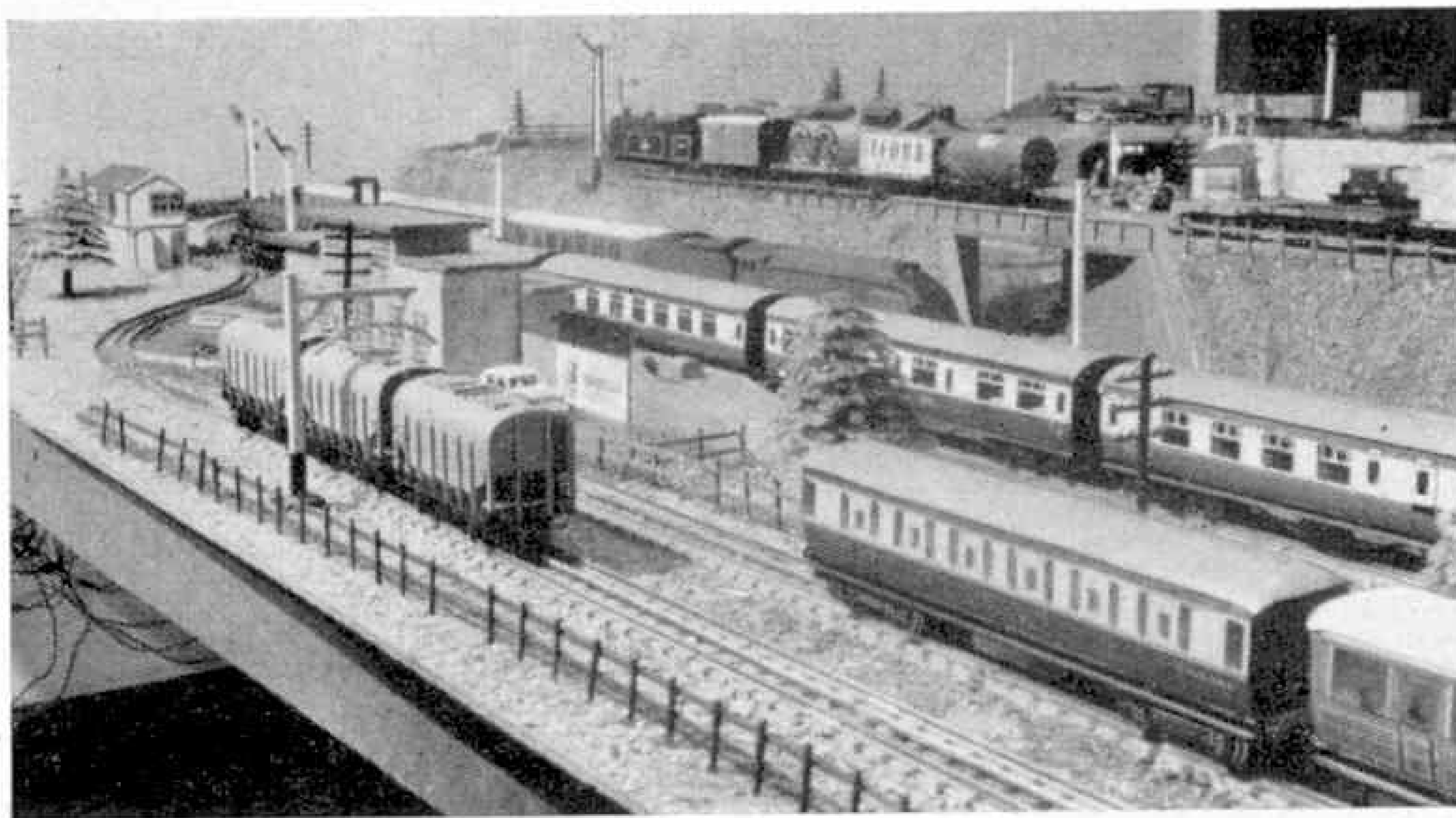
This trio has the advantage that the railway is accommodated in a room on its own, allowing space to spare outside the layout which is situated on a board 9 ft. \times 6 ft. The system represents the gradual development of several years on the part of the owners, who are to be congratulated on the realistic results they have achieved. As is evident from our pictures, the railway is arranged on two levels. There are three main lines on the baseboard itself and two on the high level section. The latter is reached from the low level section by means of an incline some 7 ft. long and graded at approximately 1 in 32.

The shape of the board has more or less

settled the general course of the lower main line section, which follows the so-called oval form. But there is plenty of room between the long edges of the baseboard and the lower main tracks. So it has been possible to incorporate not only certain sidings outside the main line, but also lineside features of a convincing nature, which are most in evidence in the lower picture on the opposite page.

The inner and outer main tracks serve respectively an island platform and a through station and adequate train services can readily be maintained between stations, while it is possible to use the centre track for long through runs if necessary. Connections between inner and outer tracks are made by means of Points arranged as crossovers and in addition a diagonal loop crossing the centre of the system provides connections and allows the directions of trains to be reversed.

Train running is attractively realistic. In the picture at the head of this article, for instance, a Hornby-Dublo 0-6-2T with a suburban train is making its way along the diagonal loop from the outer main line to the innermost one. The scene as the train



Rolling stock waits in the foreground sidings, just as one sees real vehicles at times.

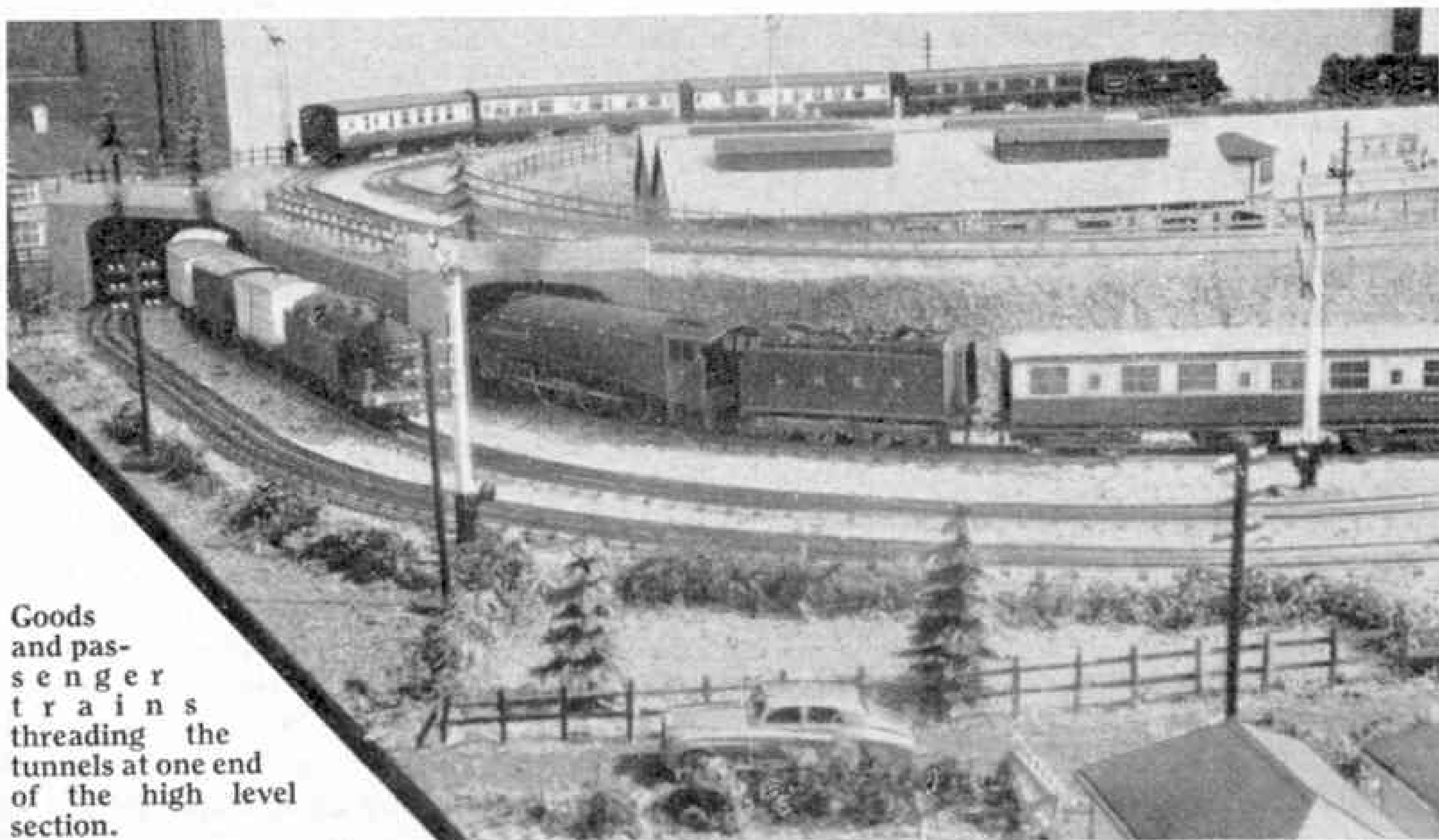
emerges from the tunnel underneath the high level tracks, with the background provided by the arches that support the level roads, is most satisfying to the model railway enthusiast. The effect is enhanced by the rows of sidings, each provided with an Uncoupling Rail so that shunting and marshalling operations can be carried out very effectively, that the train is passing.

On the railway there are in all 40 arches, all moulded in plaster of Paris, with the addition of wooden supports in certain places. Unlike the arches, the tunnel mouths, of which two are shown in the lower illustration on this page, are cut from balsa wood and covered with brickpaper. A different form of covering was used for the walls of the engine shed, one end of which just shows to the right of the Turntable in the first illustration. For these, fine

sawdust dyed red was sprinkled on after adhesive had been applied to the walls, and when set the surplus was removed.

Variation in methods such as this helps the general effect of realism, as there is often a tendency for miniature buildings to present a certain amount of "sameness" in general appearance. Another instance on the layout is provided by imitation grass, which is dyed sawdust, different shades having been used in different places. Ballast effects are obtained by the use of soil and sand that actually look better than the illustrations suggest. Soil alone is used for the lineside roads.

The general effect of railway "ground" is not an easy thing to reproduce, as no doubt many readers have already found out, and this layout points one interesting way to success.



Goods and passenger trains threading the tunnels at one end of the high level section.



Town and Country in Hornby-Dublo

By "Layout Man"

HERE we have some good Hornby-Dublo railways to look at and talk about. I am sure that most of us can learn something from each of the systems shown that may well be applied with advantage to our own railways. It is for this reason that I am always glad to be able to show illustrations of layouts belonging to *M.M.* readers. These almost always contain some useful suggestions, and sometimes show fresh ways of using the standard components of the Hornby-Dublo system, at least as far as actual layouts are concerned. Individual owners who develop permanent or semi-permanent layouts invariably build up the lineside according to their own ideas and requirements and it is just this kind of situation that we have to talk about this month.

The railway shown in the illustration above is obviously an extensive affair, which has been built up by Mr. F. H. Dobbs, of Nottingham. It is quite clear that the railway arrangements are very complete. The station platforms are of sufficient length to accommodate quite long trains, and where this is possible it adds tremendously to the realism of things. See how the three-coach stopping train has

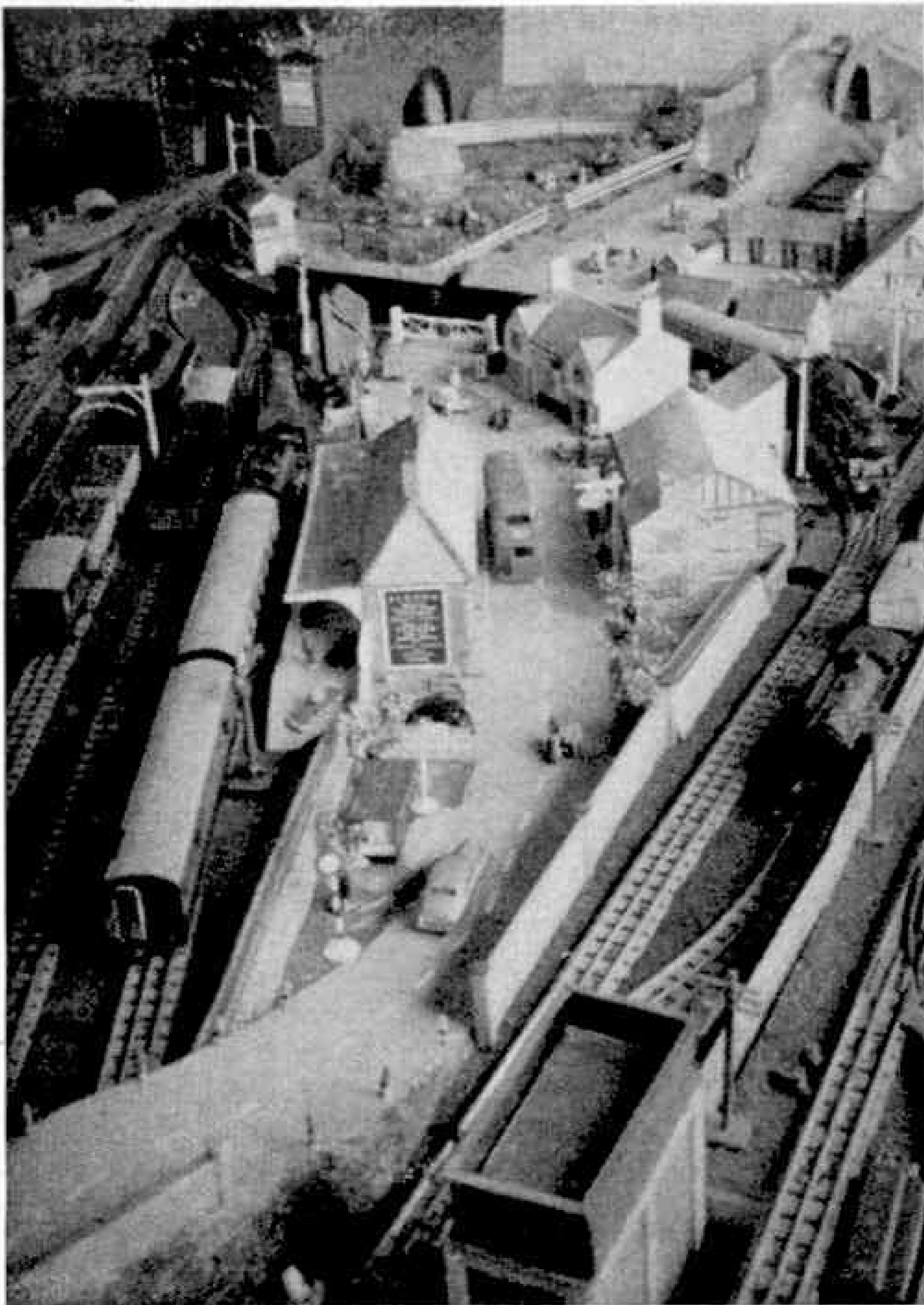
plenty of platform projecting beyond it at either end, rather than, as is often the case, the engine and perhaps even part of one coach standing beyond the platform ramp.

It is in matters of this kind that full advantage has been taken of the room available for the layout. Another most effective feature in the arrangement of the high level track crossing the end of the station at an angle, after following a reverse curve laid over the built-up section leading

from the two-arch viaduct showing below the window curtains. The reverse curve, and the course of the roadway that runs alongside it and

then passes beneath, have a most natural and attractive look that I am sure will appeal to many of you. There is an irregularity about it that is so characteristic of what one frequently finds in real life. The site of the half-timbered hostelry and filling station below the railway has been well chosen and the situation further on of the level crossing does suggest that the road carries on for miles beyond. There is just sufficient hint of a "round the corner" effect that one accepts the illusion without question. Elsewhere the layout is equally effective. Although in the far background things may seem somewhat bare at the

Above is a realistic view across the two levels on the layout of F. H. Dobbs. The course of the high level track and of the road beneath is arranged in an interesting and natural manner.



The road is hemmed in by railway on the layout of E. Cainey, Berkhamsted. A 2-6-4 Tank and train cautiously makes its way "between the houses."

moment, development is usually rapid in such situations.

Equally effective, but in a different manner, is the view at the head of this page, which shows part of the layout of Mr. E. Cainey, of Berkhamsted. The section shown forms the centre as it were of a double track layout of which the outer main lines just manage to show in the top left and bottom right hand corners of the picture.

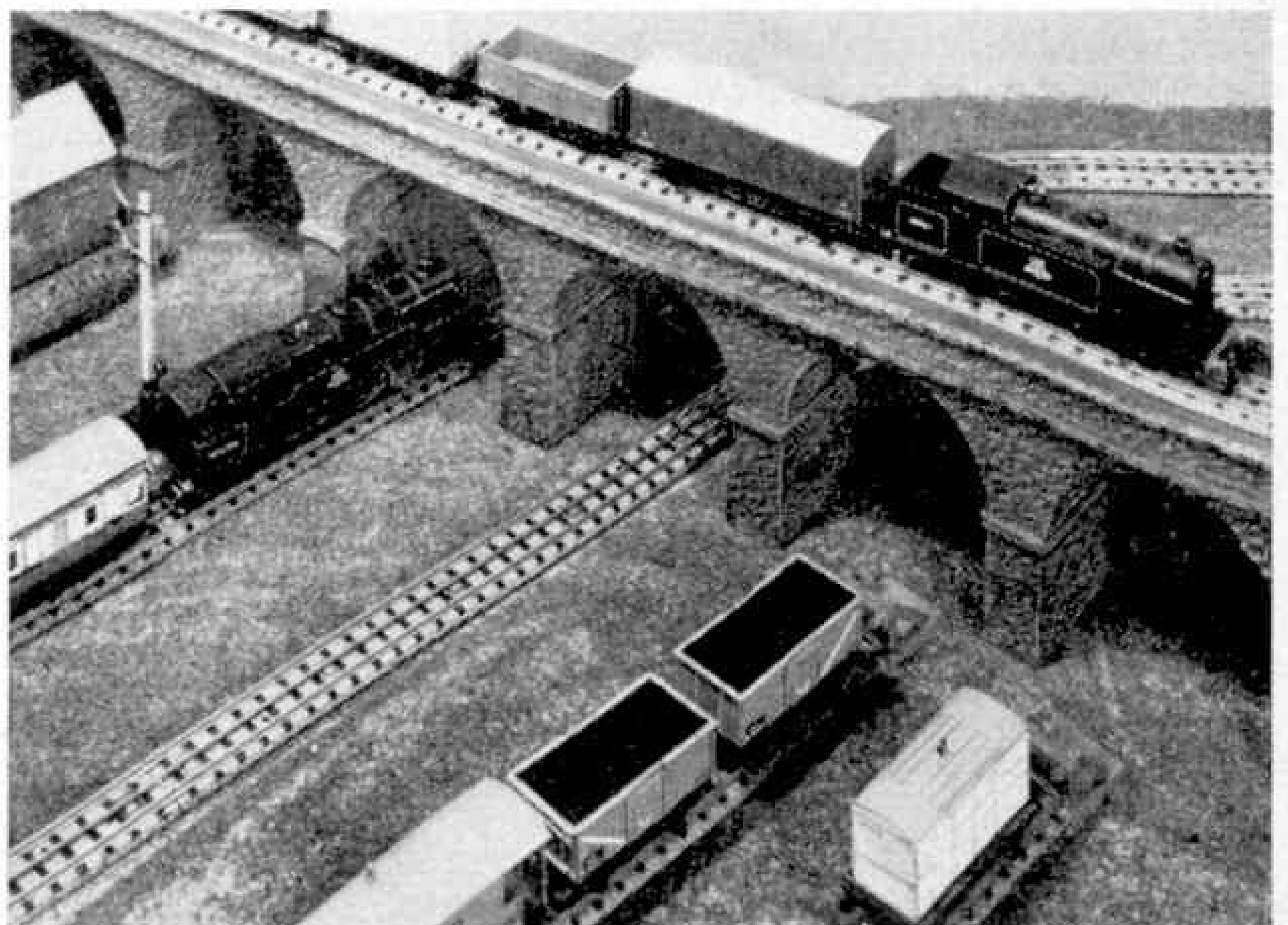
Here again the arrangement of road and lineside effects in conjunction with the railway are effective although there has not been a great deal of space to spare, as is obvious from the situation of the train cautiously

threading its way over the reverse or S-loop section between houses. This reminds one of some of the situations that can be found at times on real railways where the track runs literally past the back windows. The S-curve mentioned actually provides a means of reversing the direction of a train from the inner main line to the corresponding outer track, the kind of "down to up" loop familiar to all Hornby-Dublo layout planners.

In addition to the country station shown, there is a station on the main line, that is assembled by using the Hornby-Dublo Through Station and Island Platform in the manner often seen in these pages. There is thus plenty of scope for traffic working and as the photograph shows the sidings in the centre of the layout are really workable because they are not full to overflowing with standing stock.

The roadway winding through the centre of the layout board, which is 8 ft. x 4 ft. incidentally, introduces itself by means of a road overbridge at one end and takes its leave in a similar manner at the other. This is an arrangement that can be very effective, as one tends to take for granted what is supposed to be "over the hill."

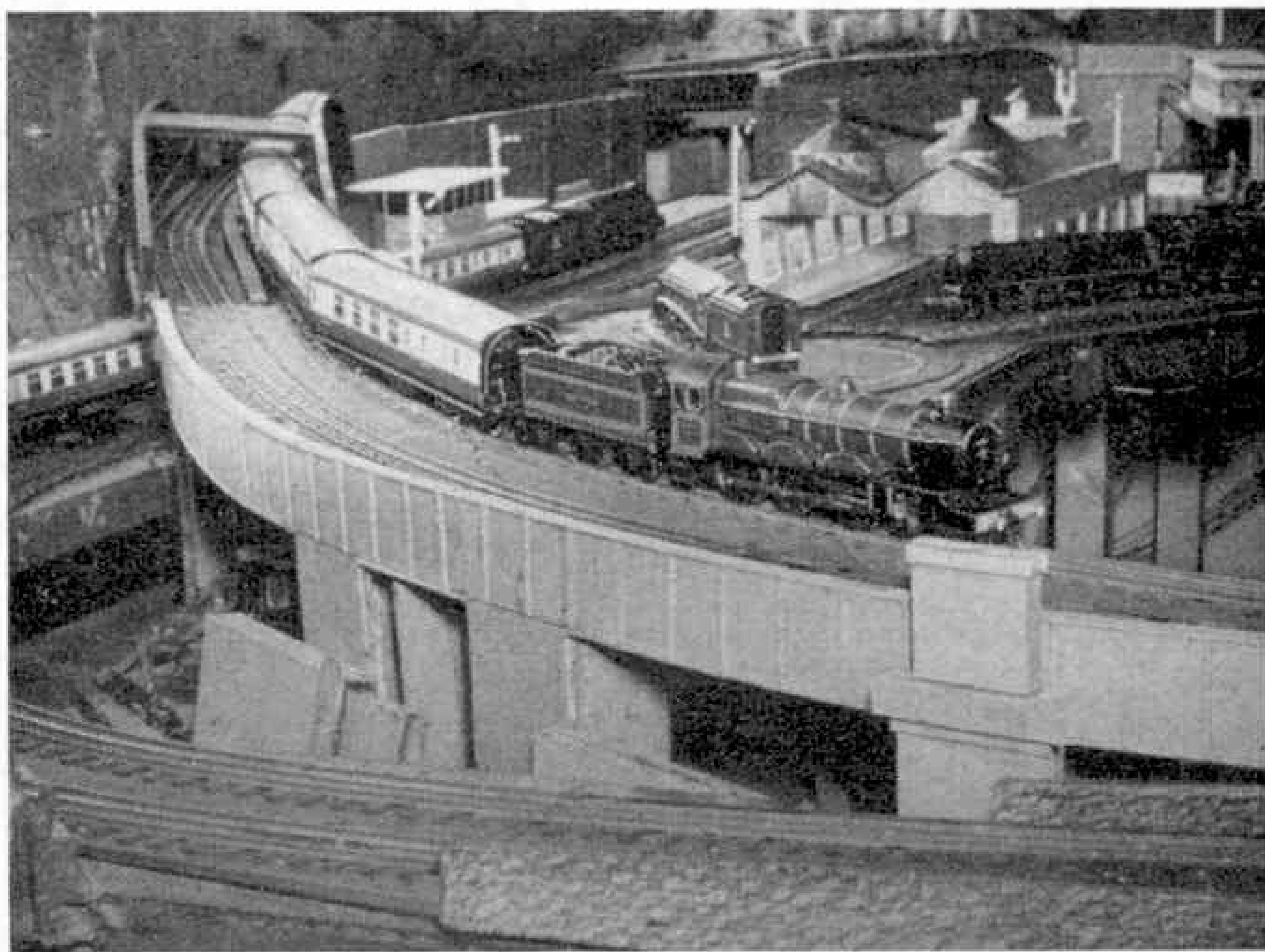
A "hill" of another kind accounts for the tunnel in the top left hand corner. Actually this is an artificial affair because the purpose of the tunnel is to support the panel on which the electrical appliances, controls and switches required



A Hornby-Dublo 0-6-2T with a mixed freight crosses the viaduct, while a 2-6-4T hurries underneath with a passenger train.

for the operation of the railway are situated. The fullest advantage has been taken on this system of the usefulness of the standard Isolating Rails and Switches, in addition to the Insulating Tabs, where the latter are required. The location of the various sections formed, in conjunction with the

Mail Van is the second vehicle of the train standing alongside the platform of the country station. The T.P.O. Lineside apparatus is installed on the outer main track and the postman's hut of this can just be seen alongside the far track on the left of the picture.



A scene on the layout of K. Crosby, Bishop Auckland, with "Bristol Castle" and a train of W.R. stock traversing a curved viaduct section. The gradient connecting upper and lower levels passes across the foreground of this picture.

placing of Uncoupling Rails, gives a most complete degree of control for working purposes. Several of the sidings shown incorporate what we may call "buffer stop" sections, in which an arriving engine can stand and be electrically isolated while another comes on at the other end of the train in order to shunt or otherwise deal with it.

In addition to these features, most of the Signals are electrically-operated and some work in conjunction with the Points to which they are related. This is a convenient arrangement for the operator on a layout such as this, where there are as many as three separate ways of crossing a train from one main track to the other. The Signal arms form a useful indication to the operator of the route for which the switch rails of the Points are set.

As is evident from the picture the Locomotives in use include a *Duchess of Montrose* for express and mail trains, a 2-6-4T used for passenger and goods work, and two of the hardworking Hornby-Dublo 0-6-2Ts that are used a great deal for shunting work. You will notice the T.P.O.

Viaduct sections are features of our other two illustrations, that at the foot of page 207 representing the arched type of stonework viaduct. This is actually a wooden structure, finished off by means of brick, or rather stone paper of the type obtainable at many model shops. A point to notice is that the wood construction has not been left entirely bare, but includes raised courses along the top and bottom edges of the parapet walls, also in the piers of the arches themselves, where the curved sections

begin. This form of relief improves what would be an otherwise plain structure and strip wood, or even good thick card suitably cut, can be used to produce such features.

The curving viaduct section above, on the layout of Mr. K. Crosby, Bishop Auckland, is interesting in representing girder spans supported on brick piers and on the track that it carries "Bristol Castle" and its train look really fine. A certain amount of wood and card modelling can readily produce structures of this kind.

Evidently further work of this nature is in hand, judging by the odd pieces of material standing beneath the spans. This is typical of miniature railway practice, and in many cases of real practice as well. In miniature, the temptation to stow away material "underneath the arches", or anywhere else, is something to which we all give way!

Raised tracks involve gradients, if trains are to travel up to them from baseboard level, and down again. Gradients should never be steeper than 1 in 30, easier if possible, and should be confined to straight sections, if this can be managed.



Club and Branch News



WITH THE SECRETARY

ON GETTING IDEAS FOR LAYOUTS

That very useful booklet *Hornby-Dublo Rail Layouts* provides a fund of well-tryed ideas for any Branch deciding upon a new layout for its track operations. Even so, there is always room for something just a bit different, and I like the idea hit upon by the Potters Bar H.R.C. Branch of arranging to visit each member's home and see what sort of layout he operates. Most home-planned layouts include *some* necessary improvisation, and it is in this respect that the proposed round of visits might well provide some good and original ideas for incorporating into a new, large layout that is to be planned and laid down in the Branch room. Just that "little something", in fact, that can make a layout different from anything "in the book"!

MERIT MEDALLIONS

Now that the 1958-9 Winter Sessions are over, Club Leaders will be able to take stock of what has been achieved and, according to where the most merit lies, award the two Merit Medallions per Session to which each Club is entitled. This official recognition of good work for Club and Guild is greatly appreciated by all who receive it, and I do hope that Leaders will take full advantage of this means of acknowledging good service. If they do, then I shall be able to include a record list of such awards in my annual summary in next year's February *M.M.*

H.R.C. BRANCHES RECENTLY INCORPORATED

No. 573 THIRD WIGAN SCOUT GROUP.—*Chairman:* Mr. R. W. Banks, 47 Park Road, Wigan.

No. 574 SOUTH LINCOLN.—*Chairman:* Mr. Smith, 45 Shannon Avenue, Boultham Moor, Lincoln.

PROPOSED H.R.C. BRANCH

Readers in the Birmingham district will be interested to hear that efforts are being made to form a Branch of the Hornby Railway Company there. Readers interested should write to Mr. Paul E. Pears, 150 Horrell Road, Sheldon, Birmingham 26, and enclose a stamped addressed envelope for reply.

CLUB NOTES

MILE END (PORTSMOUTH) M.C.—Meccano model-building activity has continued, and a high standard has been maintained. The enthusiasm of members has been reflected in keen discussions during the planning of a forthcoming exhibition. The photographic section and the Dinky Toys club meet on Monday evenings. Country outings are being arranged, so as to provide opportunities of taking pictures of country scenes. The model aircraft section is well organised, and it is hoped shortly to entertain members of the local model aircraft club. *Secretary:* Mr. A. J. Nicholson, 213 Sultan Road, Buckland, Portsmouth.

BORDEN GRAMMAR SCHOOL (SHEERNESS) M.C.—The fourth and last baseboard for the Club layout has been begun, and it is hoped to start single track running shortly. Double track has been laid on the other three

baseboards, and this will apply to the latest one in due course. *Secretary:* B. L. Sedge, 19 Cavour Road, Sheerness, Kent.

HORNSEA M.C.—Games evenings and film shows have made up the programme recently, with mainly good attendance. *Leader:* Mr. R. W. Shooter, 84 Cliff Road, Hornsea, E. Yorks.

BRANCH NEWS

AVIARY (LEEDS).—Development of the Branch layout has continued satisfactorily, with a second circuit in course of installation round the room. Two corners have been enlarged with hardboard and wood. Members were invited to bring their own



A happy group of members of the Maylands (Western Australia) M.C. photographed as they left a diesel railcar at Chidlows, in the Darling Ranges, on the occasion of a Club outing.

locomotives while the Branch ones were being overhauled and repaired. Model-building also has kept members busy, mainly building houses and fences, but some scenic work has been done on the recently filled-in corners just mentioned. Quiz programmes continue to be popular. It has been suggested that another photographic competition be held. Two previous contests, in which first, second and third prizes were awarded, were very popular, and some excellent entries were received. *Under-Secretary:* J. Baker, 10 Salisbury Terrace, Leeds 12.

POTTERS BAR.—At the Annual General Meeting plans were begun for the annual pilgrimage to the Model Railway Exhibition in London. It was also decided to arrange a visit to Hitchin or Hornsey sheds, and a photographic expedition as soon as the weather is suitable. At the time of writing, a visit to the model village of Bekonscot, at Easter or Whitsuntide, was being considered. Plans are also in hand for visits to members' homes to see the design of layouts in use. After having studied them all a new Branch layout will be planned, and, rolling stock and rails for this are being accumulated gradually. The scenery for the new layout will be designed and constructed by the members, who are very enthusiastic. *Secretary:* R. Woods, 120 The Walk, Potters Bar, Middlesex.

DON'T MISS THESE!

If you want really FIRST-CLASS selections send for our BARGAIN Q.E. DISCOUNT APPROVALS! They contain Q.E. in singles and sets and a host of other first-class stamps. Generous discount off catalogue prices. No more sent unless you ask and you are not obliged to buy. We pay outward postage. "Wants" lists welcomed from regular clients. Br. Cols. only or Br. Cols. and Foreign Mixed lots available. WRITE NOW!

THE BIRKDALE STAMP CO.
104 Liverpool Rd., Southport, Lancs.

Postal Business Only
(NO CALLERS)

BARGAIN FOR STAMP COLLECTORS

114 Different STAMPS INCLUDING SPUTNIK! Plus 88 FLAGS



THE GREATEST STAMP BARGAIN EVER OFFERED

GERMANY SPUTNIK, first "Space Stamp" in history. MONACO—Grace Kelly Wedding. CUBA—Cigar Set. SPAIN—Siege of Saragossa (4). AUSTRIA—World War 1 Military Stamp. RED CHINA—Liberation imperfs (2). UNIQUE SET-TEENANT—2 different Roumanian stamps in a genuine joined pair and many other interesting issues. Grand total 114 all different stamps from all over the world.

PLUS 88 DIFFERENT "FLAGS OF THE WORLD". A fascinating and unusual extra to dress up the pages of your album.

PLUS Useful perforation gauge and watermark detector.

FREE! PLANET MAIL & BOY SCOUT JAMBOREE SHEETS. Two smashing souvenirs (not stamps) that will be the showpieces of your collection. Not one collector in 10,000 has these unusual items.

EVERYTHING FOR JUST 1/- TO INTRODUCE OUR BARGAIN APPROVALS

SEND 1/- TODAY. ASK FOR LOT MC42 BROADWAY APPROVALS

50 DENMARK HILL, LONDON S.E.5

Indonesia 1958 Badminton World Champion

This grand complete mint sports set offered free to all enclosing postage and requesting to see our popular approval selections. **YULWONTMOR STAMPS** (Dept. M), 29 Layton Avenue, Mansfield, Notts.

BRITISH Colonial, Foreign Spacefillers, 15 a 1d. Pictorials. Commemoratives, Colonials, Foreign, ½d., 1d., 1d. Postcard secures hundreds approvals.

PILGRIM,

Priory View Road, Moordown, Bournemouth

The £1 GREAT BRITAIN QUEEN ELIZABETH II stamp for only 1/-



This scarce, handsome, used stamp, the £1 black, Britain's highest value, showing H.M. The Queen and Windsor Castle, is catalogued at 15/- and normally sells at 10/- to 12/6. But we will send you one if you just ask to see our new Special Approvals and enclose 1/- plus 3d. towards postage (making Bargain price of 1/3 in all—in stamps). There's no need to buy anything.

PHILATELIC SERVICES

(Dept. M.M.35), Eastington, Goole, Yorkshire

SERIOUS COLLECTORS SHOULD SEND A POSTCARD FOR FIRST-CLASS APPROVALS SELECTION STATING CHIEF INTERESTS.

H. B. LANG

BURNBANK—MAUCHLINE—AYRSHIRE

MODERN UNSORTED LOTS ON PAPER—British Empire 1 lb. 27/6, ½ lb. 14/6, 4 oz. 7/9, World-wide lot 1 lb. 22/6, ½ lb. 12/-, 4 oz. 6/6, Gt. Britain 1 lb. 8/-, ½ lb. 4/9. Lots per 4 oz. U.S.A. 5/6, Europe 5/6, Swiss 6/3 (abd. ex.). **A. DAVIES** (M3), 3 Manor Road, Wroxall, I.O.W.



12 High Value

B.C. Cat. 7/6 FREE

REQUEST QUALITY APPROVALS (PRICE 1/6 WITHOUT APPROVALS)

Applicants must send 3d. for Postage (Abroad 1/- extra for Regd.). Monthly selections a speciality. Adult collectors catered for. If you wish you may join "THE CODE STAMP CLUB". Sub. 1/-. Approvals sent monthly. (Postal sec. Est. 1897.) We aim to please.

WRIGHT'S STAMP SHOP

Canterbury Ltd., (M24) Canterbury, Kent

Stamp Collectors' Corner

By F. E. Metcalfe

SHALL WE GO TOPICAL?

I am being continually asked which are the best stamps to collect. I have previously suggested our own colonial stamps, particularly those of the present reign, but I think that a subject collection might be worth consideration. The Americans would call such a selection topical, and British stamp enthusiasts use the word thematic.

But, what subject? Well there are plenty to pick from. One enthusiast told me recently that thematic collectors today are tackling over a thousand subjects! But it was also admitted that the number of subjects favoured by the majority is very much below that figure. Flowers seem to be most popular in the U.S.A.,

where this type of collecting is more popular than in Great Britain, whereas Britons prefer ships and trains and maybe among them aeroplanes will not be far from the top.

It is nice to get off the beaten track occasionally, however, and some of the not

quite so popular subjects may have their appeal, providing there are plenty of stamps that fit in with them. Many have heard about the "religious" collection of the American Cardinal Spellman, which covers every facet of religion. This has been shown all over the world, and has delighted the thousands who have had the luck to see it.

Country people—and perhaps more so, those country people who have to live in urban areas—could get a lot of fun out of stamps that depict farm animals. There are a lot of these and it would be interesting to track down the various species and breeds.

Stamp collecting is very popular with ladies nowadays and jewellery might appeal to them and indeed to many of the opposite sex. Yes, I know there would be a rush for a certain French stamp, but a careful search would reveal many more stamps for such a collection. Jewels need not be the main subject of design. Look too for stamps in which say a lady is wearing a fine ring, bracelet or necklet.

I have just received a letter from the U.S.A. that bore two stamps depicting the Hungarian leader of the 1848 revolution, Lajos Kossuth. Incidentally if you want to pronounce this and similar names correctly, the s in Hungarian has the sh sound, unless the letter c follows the s, when it is pronounced as in our own language. From time to time the United States releases stamps with portraits of what they call Champions of Liberty. Many



countries have issued stamps with the same theme, and a really wonderful portrait gallery can be got together with such stamps.

I know that fishes make a rather trite subject, but there are such a lot of fine fishy stamps that it would be a shame to neglect them altogether. Perhaps you lack time, or inclination, to go after the more difficult stamps. Well, then, fishes will provide lots of fun for you more easily. Mind, there is plenty of scope for research here.

For instance Monaco issued a 25c stamp honouring Jules Verne and his book *Twenty Thousand Leagues Under the Sea*. Several fishes were illustrated on the stamp, and Mr. H. C. Simonson, a thematic collector in the U.S.A., wanted to know what those fishes were. So he got busy and found that an octopus (*octopus vulgaris*), jellyfish (*Coelenteres*), Butterfly-fish (*Heniochus acuminatus*), Bat-of-the-Sea (*Dibranchus atlanticus*), Angel fish (*Pterophyllum scarlare*) and Conger Eel (*Conger Conger*) were depicted. I have given that in detail, as taken from *Linn's Stamp Weekly*, for it shows what I have tried to infer—that thematic collecting is not just a case of getting hold of a lot of stamps, sticking them in an album and thinking that is all there is to be done.

Stamps on stamps are well worth consideration. One country after another is commemorating the centenary of its first postage stamps. It is getting on for 20 years since our own Post Office, so grudgingly and with such poor taste, commemorated the "Penny Black". Poor as was that first set, it set the pattern for others, and now quite a nice little collection can be gathered of such issues. As time goes on, and more countries issue stamps on stamps, a collection of these should turn out very nice property. As a matter of fact, though most of the stamps in question are within the pockets of many of us, some are already scarce.

Kenya only recently issued a couple of stamps to commemorate the centenary of the discovery of Lakes Tanganyika and Victoria. These would be snapped up by those collectors who go in for stamps with exploration as the subject, which is one that lends itself to a really fine collection. Stamps like the "Everest" set of India, etc., all come into this field.

I suppose that a collection with maps as the theme can hardly be considered as unusual, but a collection of this kind is of such outstanding interest to non-collectors as well as collectors that I really must mention the subject. There are plenty of stamps that fit in, and a quite magnificent collection can be gathered at a very reasonable cost by anyone on their toes.

Now, what about a thematic collection on original lines? Think out a subject for yourself if none of those suggested appeals to you. You will get lots of fun if you do.



PICTURE CARDS

We offer complete sets in clean condition.

50 Planes 2/9 50 Trains 2/9 50 Animals 2/9
50 Birds 2/9 50 'Space' 2/9 50 Footballers 2/9
50 Ships 2/9 50 Fishes 2/9 50 Coins 2/9
50 Cars 2/9 50 Cricket 2/9 Any 4 for 10/-

100 different cards 3/- post free.

ALBUMS to hold 200 cards 2/9 post free.
Send 6d. for CATALOGUE of 1,500 different series.

FREE MATCHBOX LABEL



This scarce PHILIPPINE label sent FREE to all those sending 3d. and requesting our MATCHBOX LABEL APPROVALS.

E. H. W. Ltd. (Dept. M)
12 SICILIAN AVENUE, LONDON W.C.1

All Different PACKETS All Different

World 500 5/-; 1,000 10/-; 2,000 23/-; 3,000 40/-;
Brit. Empire 200 3/6; 300 6/9; 500 14/9; 1,000 44/-
25 Cyprus 4/-; 50 Danzig 7/4; 50 Egypt 2/-; 100 Greece 3/4;
50 Guatemala 4/-; 10 Zanzibar 2/-.

SETS: Hong Kong 1946 Peace, set of 2 mint.....2/-
MONGOLIA New Animals, set of 8 used.....1/5
GREAT BRITAIN 1936 K.E.VIII, set of 4 mint....11d.

Overseas orders welcome

Postage 4d. **H. V. JOHNSON & CO.** Lists Free
78 Dale Road Wickersley ROTHERHAM

FREE—STAMPS CATALOGUED 5/-

to applicants for 1/4d. approvals.

COX, 32 ROSEBURY ROAD, EPSOM, SURREY

3 GIANT LAOS FREE to every- PACKETS

| 10 diff. | 50 diff. | 100 diff. |
|------------------|------------------|----------------|
| Afghanistan 3/6 | Australia .. 1/9 | China .. 1/6 |
| Saudi Arabia 2/- | Malaya .. 3/6 | Chile .. 6/- |
| 25 diff. | S. Africa .. 2/6 | Norway .. 3/- |
| Jamaica .. 2/6 | Ecuador .. 4/- | Swiss .. 5/- |
| Ceylon .. 1/6 | Mexico .. 2/6 | Finland .. 3/3 |
| Malta .. 2/6 | Israel .. 8/- | Poland .. 3/9 |

Please tell your parents

Postage 3d. extra. C.W.O. LIST FREE
Battstamps (L), 16 Kidderminster Rd., Croydon, Surrey

100 Different Stamps FREE!

Plus Super Perforation Gauge to all applicants asking to see my famous 1/4d. upwards Approvals. British Colonial or Foreign. Don't delay, write today enclosing 4 1/4d. in stamps for postage.

C. T. BUSH (MM4),

53 Newlyn Way, Parkstone, Poole, DORSET

7 MAURITIUS 7 FREE

Send 3d. stamp for Approvals priced from 1/4d. each

MAINLY BRITISH COLONIALS
G. C. ANSON

84 Shirley Way, Shirley, Croydon, Surrey

110 DIFFERENT STAMPS FREE!

Foreign and Colonial including Pictorials, absolutely Free to applicants requesting my famous discount approvals, enclosing 3d. for postage.

H. BANKS, 62 AVONLEA ROAD, SALE, CHESHIRE

★ NO GIFT ★ Huge Price List of British
JUST VALUE Colonial plus 40% Discount
Colonial Approvals sent on request. **B. G. W. Fletcher**
(Member P.T.S., Boy Scouts' Ass. Badge Test Examiner)
Woodlands, Church Road, Stoke Bishop, Bristol 9

FREE!



CATALOGUE VALUE 4/9

TO ALL APPLICANTS FOR OUR
BRITISH COLONIAL APPROVALS
ENCLOSING 3d. STAMP

1939/48 Great Britain Bargains:
2/6 Brown, 2/6; 10/- Light Blue,
2/6; 10/- Dark Blue, 10/-;
£1 Brown, 10/-.

R. J. SMITH & SON

81 Redbreast Road, Bournemouth

50 PICTORIAL STAMPS FREE

This packet of stamps is given absolutely FREE to all genuine applicants for my superior used British Colonial Approvals enclosing 4 1/4d. in stamps for postage. Overseas Applications Invited.

D. L. ARCHER (M),

2 LITCHFIELD WAY, BROXBOURNE, HERTS.

1959 NEW ISSUE PKT. 6d.

All very recent issues including Russia "Moon Rocket" stamp. Normal value of packet 2/- but offered for 6d. only to introduce our service to new collectors. Just send 6d. (two 3d. stamps) and ask to see an approval selection—(if approvals not required please send 2/-). Write today to:
CAPTAIN M. CAMPBELL & CO. (Dept. MM),
58 High Street, Watford, Herts.

FREE!

PICTORIAL PARCEL

with Approvals 3d. stamp please.
ALLCOCK, 74 Tynyparc Rd., Rhiwbina, CARDIFF

20 Q.E. FREE!

Including Mint Pictorials

This exciting packet will be sent FREE to all who ask to SEE our famous new "TipTop" COLONIAL APPROVALS. (6d. in 1/- Discount). Write today for prompt attention.

(3d. stamps towards postage appreciated).

M. THEOBALD (120)

4 Sipson Road, West Drayton, Middlesex

SPECIAL To all Approval Applicants this month
FREE KG VI VICTORY SET MINT 3d. Postage.
A. CUNNINGHAM (Dept. MM), 36 Doonfoot Road, Ayr.

Stamp Gossip

ATTRACTIVE DESIGNS

The late Edmund Dulac, who was a gifted artist, used to say that it was nigh impossible to produce a first-class design when a portrait had to be included. Well, there are many attractive stamps designed and printed in Britain for foreign governments, and most European countries are turning out stamps that are a sheer delight. Just take a look at the one printed in France for its North American possession St. Pierre and Miquelon. And for the home post office in France one design more beautiful than another is being produced continuously.



I wonder what we would think if our Post Office got away from the stodgy special issues issued from time to time—I am not thinking of our definitive stamps, which I think are just right—and gave us a stamp as attractive as the one illustrated.

NOT SO ATTRACTIVE

I am not going to go as far as to say the descent is from the sublime to the ridiculous, but there would be few who would care to give a second glance at the stamp printed in Berlin for Peru that is illustrated here after seeing the St. Pierre and Miquelon issue. So while it is true that our own special stamps are nothing to write home about, it has to be admitted that ours is not the only country turning out duffers. We can just imagine the scathing comments that would have been made if our G.P.O. had turned out anything so dull and trite as this German-printed Peruvian stamp.

BOOKLETS

As most collectors know, the watermark of our British stamps has been changed for the second time during this reign. The crown is all that remains of the pattern, the EIIR having been dropped. The stamps with the new watermark will be common enough, but it is in the stamp booklets where they should be sought, for some of the panes will have the old watermark and others the new "Crown". All the variations will be included in the



next edition of the Commonwealth Catalogue.

As proved to be the case when the watermark was changed previously from the Tudor to the St. Edward's Crown, some of the variations no doubt will prove quite scarce. I am quite aware that it is not always easy to tell one watermark from the other when examining a single stamp, but with a bit of care and patience it is not difficult to distinguish them when the six stamps of a booklet pane are being examined.

And here is a tip that will help you when examining a watermark. Get a piece of cellophane of the same colour as the stamp. It does not matter about being of the same shade, for a red will do for all reds and oranges. Now put the cellophane in front of the stamp and hold it up to the light to look at it from the front. More often than not the watermark becomes quite visible, particularly in the case of red or orange stamps.

AUTOMATION

If any M.M. readers were passing along King Edward Street, London, on Sunday, 14th December last, say on their way to St. Pauls, they might have seen some cabinets of electronic equipment, four tons of them, being hoisted up 65 feet and taken in through a window of a building belonging to the Post Office.

Now that equipment cost a cool quarter of a million pounds. And what will the Post Office get in return? Well, the return is the complete job of preparing the largest

centralised pay-roll in the world for a staff numbering 112,000. A pay calculation that previously had taken from two to three minutes will take less than a second, and pay slips will be made out at the rate of 6,000 an hour. Ten inches of microfilm will hold the pay records of a thousand employees.



TIP OF THE MONTH

More stamps on the Crown Agents' list are shooting up. There is the obsolete Montserrat "QE" II \$4.80, but care must be taken to see that any copy bought bears the caption *Presidency* and not *Colony*, for the latter is the replacement and is current. This stamp has gone up in a few weeks from something under 30/- to well over 40/- and will go farther.

Such a price may be a bit above what most of us can afford to pay for a stamp. But there are the other three values that had their captions changed at the same time as the high values. These are the 1c, 3c and 6c, numbered in the Commonwealth Catalogue as 36, 39 and 42, and in Gibbons as 136a, 139 and 142. You need not pay more than about 1/6d. for the three, if you hurry. They will never be worth a lot of money, but will become dearer.

A Happy Dinky Toys Collector's Licence Holder



THE fortunate holders of the Dinky Toys Collectors' Licence numbers selected by Stirling Moss continue to come to Binns Road monthly, and the most recent of them was David Parton, who lives in Weston-super-Mare, the well-known seaside resort in Somerset. David is eight years of age, and he was overjoyed when he learned that he was to be invited to Liverpool, along with his sister Lynn and Mr. and Mrs. Parton.

All four had a really delightful day looking round the great Works of Meccano Limited at Binns Road and at Speke, and seeing how their beloved Dinky Toys are made.

Our picture shows the members of the Parton family at Binns Road, along with Mrs. U. P. Hornby, a director of the firm, and a glance at it leaves no doubt of the intense joy that this visit gave all our visitors from Weston-super-Mare.

"THE WANTAGE TRAMWAY"

By S. H. PEARCE HIGGINS
(The Abbey Press, Abingdon, Berks.)

Roadside tramways in rural areas have not been as familiar a feature of the British countryside as of that of the Continent, where some systems survive to this day. Of those that were laid down in Britain, the Wantage Tramway in Berkshire was perhaps the best known. It connected the town of Wantage with the Great Western Station at Wantage Road, and was revered by devotees of light railway practice as the pioneer tramway in Britain to adopt mechanical means of locomotion.

The tramway was opened in 1870 with the use of horses, then almost universal, but it was not long before steam became its motive power for both goods and passenger traffic. The locomotives and rolling stock were a varied and interesting mixture of conventional railway and street tramway practice and there was even a combined steam locomotive and passenger car in use for a time.

Perhaps the best known of the locomotives was the 0-4-0 Well Tank No. 5 known as "Shannon", which was the mainstay of the passenger and goods services from 1878 until 1945. It is now on permanent display at Wantage Road Station, having been overhauled and restored by the late Great Western Railway Company.

Passenger services were maintained from 1870 until 1925, and the line continued in use for goods traffic right through the Second World War period, but was unfortunately closed down completely in 1945. Little trace of it remains today.

The author, who has devoted many years of study and research into the records of the Wantage Tramway, covers the history of the undertaking and its locomotives and rolling stock in a most thorough manner, and no detail seems to have been overlooked. The poet, John Betjeman, who was familiar with the line in its latter days, praises its long record of independence and integrity in a foreword.

There are 158 pages of interesting information, notes and appendices, which together with excellent maps, diagrams and photographic illustrations, make the book a pleasure to read and of value to every follower of railway history.

Copies can be obtained direct from the publishers, The Abbey Press, Abingdon, Berkshire, price 21/-, post free.

* * * *

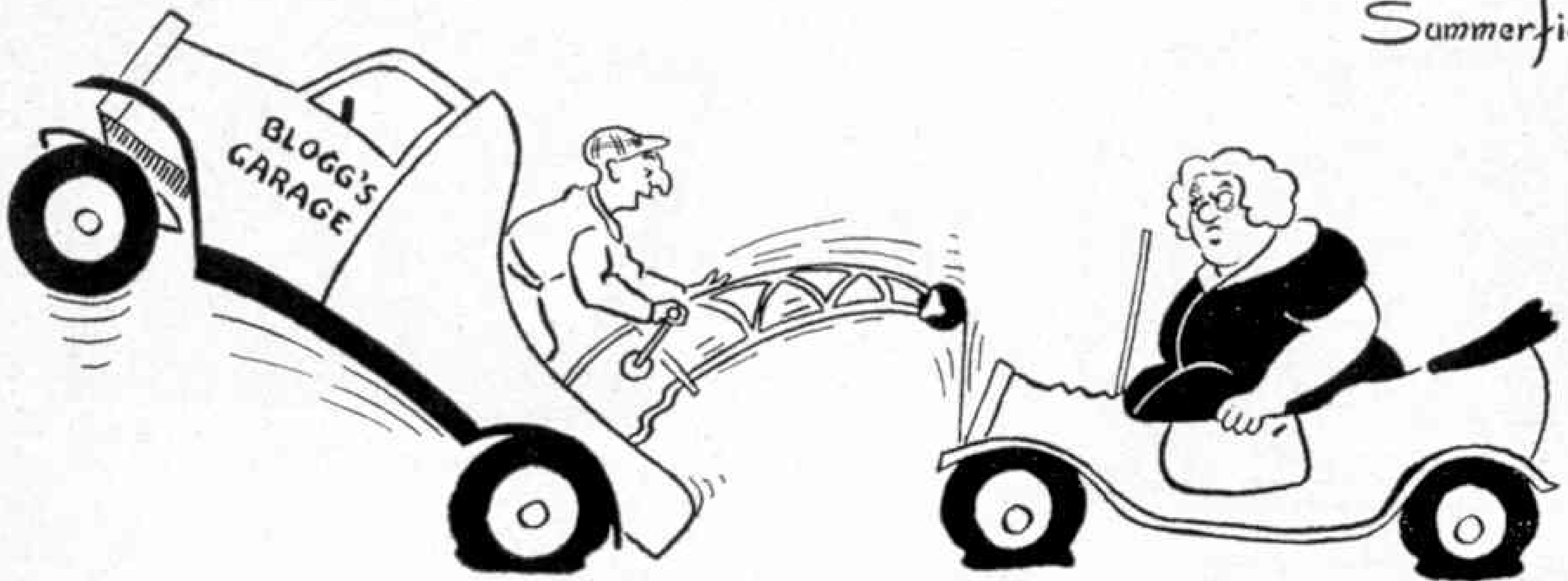
VETERAN CAR PICTURES

The Royal Society for the Prevention of Accidents has produced a series of cards, of the cigarette-card type and size, depicting veteran motor cars.

These are delightful and true-to-life pictures of models produced more than half a century ago, and on the back of each card is a brief description of the veteran car pictured on the front, and an interesting road sense quiz.

The set of twenty-four cards can be obtained from The Royal Society for the Prevention of Accidents, Terminal House, 52 Grosvenor Gardens, London S.W.1. The price is 1/- for the set of cards, and an album in which to mount them costs 9d.

Summerfield



"Can't understand it, lady—Never had any trouble lifting this sort of car before!"

Fireside Fun

Unwanted Caller: "Can I see the manager, please?"
Office Boy: "He's out."
Caller: "Can I see the under-manager?"
Office Boy: "He's out."
Caller: "Very well, I'll just wait by the fire."
Office Boy: "It's out."

* * * *

A little boy had just been abroad for the first time, and his fortnight had proved absorbing but exhausting. When his friends asked him how he had enjoyed himself, he said:

"Smashing, but I did get tired of being interested in everything."

* * * *

Batsman (facing bowler, who in a previous game knocked out some of his teeth): "Guess you're out to get the rest of my teeth."

Bowler: "No fear! I'm out to get the stumps this time."

* * * *

A group of small boys were talking about their mothers before they were married.

"My mother was a typist," said one.

Another put in: "My mother was a nurse".

Then one little boy, determined not to be outdone, said: "My mother was nothing so she got married."

* * * *

Sailor: "Yes, sir, that's the 'Mary Jane' that is, bound for Dundee with Corfee."

Visitor: "With what?"

Sailor: "Corfee—what you make tea with."

* * * *

A Maharaja was showing a visitor round his palace. "Why three swimming-pools?" the visitor asked.

"Well, you see," replied the Maharaja, "one is a hot-water pool and the second a cold-water one."

"But the third one is empty!" exclaimed the visitor.

"Yes," returned the Maharaja. "That's for friends who can't swim!"

"I'm dreadfully sorry to be so late," apologised the guest.

"My dear Mr. Smith," said his hostess, intending to be pleasant, "you can never come too late."

* * * *

Maid: "I'm very sorry, Miss Brown said to tell you she is not at home."

Visitor: "That's all right. Just tell her I'm glad I didn't come."

* * * *

The teacher was scolding little Jimmy for not washing his face in the morning. She said, "See, I can tell you had eggs for your breakfast. Some of it still remains on your mouth."

"No, teacher," Jimmy replied triumphantly, "that is yesterday's—I had bacon this morning!"

THIS MONTH'S BRAIN TEASERS

A MATCH PUZZLE

Take six matches from a box and then try to lay them out in such a manner that each match touches *all* of the others. This is not an easy trick.

FIVE MINUTE CROSSWORD

CLUES

Across

- 1 Express an opinion
- 4 A Messenger
- 5 A Continental coin

Down

- 2 One who possesses
- 3 Babies do this

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | V | 2 | O | 3 | I | C | E |
| | | | W | | | R | |
| 4 | E | N | V | O | | | |
| | | | E | | | O | |
| 5 | F | R | A | N | C | | |

ANSWERS TO LAST MONTH'S PUZZLES

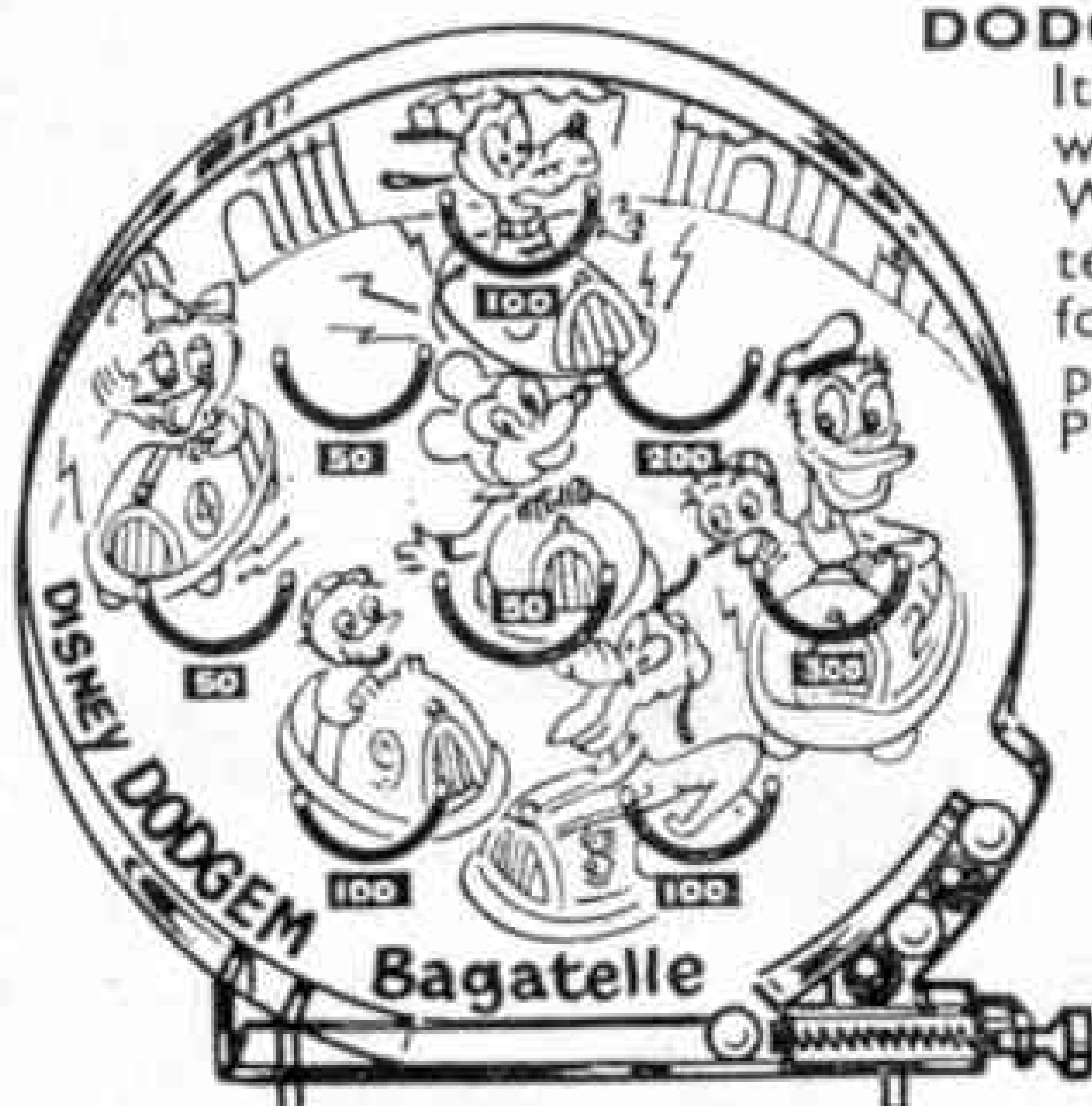
Oh What!

It was one or more letter "O" that was missing from the words given, and the full words were:—
octoroon, oratorio, protocol, voodoo, sonorous, orthodox.

Word Changing

Solutions to the word changing examples given are as follows:

| | | | |
|------|------|------|------|
| Bird | Torn | Hurl | Bite |
| Bard | Born | Curl | Bits |
| Ward | Bore | Cure | Bins |
| Wart | Bare | Core | Tins |
| Want | Bale | Cope | Tons |



DODGEM BAGATELLE

It's colourful, it's fun, with those irresistible Walt Disney Characters, with instructions for erection of the plastic stand.

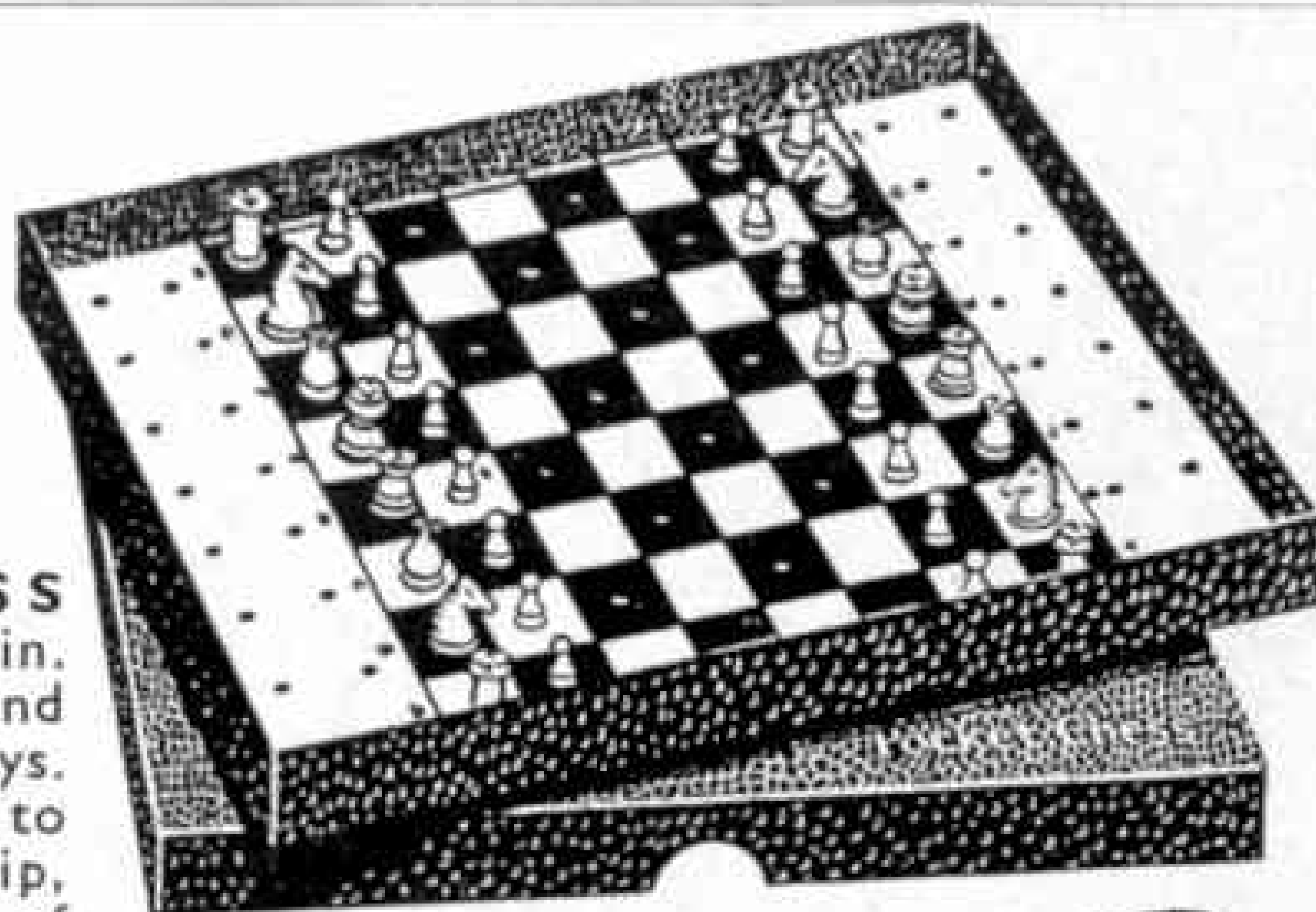
Price 6/11

Post & Pack. 1/-

POCKET CHESS

Measuring 6½ in. x 4½ in. beautifully boxed and ideal for long journeys. The board is attached to the box, so cannot slip, the pieces are made of plastic, extra holes for conquered pieces.

Price 6/6. Post & Pack. 1/-



SPECIAL AGENT PISTOL and HOLSTER SET. Realistic miniature pistol, can be held in palm of the hand and not seen, wear the holster from the hip or wear it as a shoulder holster. 5/- the set, or 2/6 holster, 2/6 Pistol. Post & Pack. 1/3



It's new, It's Fantastic. Bounces like a ball, take imprints, will mould, stretch, or run. Price 3/9. Post & Pack. 7d.

POP GUN.

Squeeze the butt and out pops the ping pong ball, fascinating and new. For longer range, hold the gun in one hand and hit butt sharply with other hand. Made of rubber. Price 3/6 Post & Pack 9d.



* Such Jolly Toys from -

Hamleys
Estd. 1760
HAMLEY BROTHERS LTD.

The Finest Toyshop in the World

Our only address 200-202 REGENT ST. LONDON W.1



is to enroll or one of our

SIMPLIFIED POSTAL COURSES

Write now for **FREE 20-PAGE PROSPECTUS**

SHORTHAND (16 Easy Lessons)
TYPEWRITING

(New Whole Sentence Method)

BOOK-KEEPING (The Practical Approach)

SECRETARIAL TRAINING

LANGUAGES (Modern Methods)

Individual Preparation for the following:

GENERAL CERTIFICATE OF EDUCATION
CIVIL SERVICE, LOCAL GOVERNMENT,
TECHNICAL SUBJECTS: A complete range from
CIVIL ENGINEERING to WOODWORK DRAWING

Short Story Writing—Writing for Radio & TV.

Also Simplified Postal Courses for children for
11+ EXAMINATIONS

*Free Attainment Tests. *Courses based on
results of these. *Fully Qualified Tutor
allocated by name to each child. *FREE
24-page Guide.

Mention the subjects in which you are interested
and age of child (if applicable) to

The Registrar

MERCER'S CORRESPONDENCE COLLEGE

Dept. (M.1), 69 Wimpole Street, London W.1

RAILWAY ACCESSORIES

| | | | | |
|----------------------------------------|----|----|------|------|
| Station Staff Sets | .. | .. | 2/6 | 2/11 |
| Seated Passengers | .. | .. | 2/6 | 5/3 |
| Ex R.A.F. 16 Switch Boxes | .. | .. | 7/6 | 7/6 |
| Set 4 Cows or 12 Sheep | .. | .. | 2/- | — |
| Set 24 Milk Churns | .. | .. | 2/6 | 3/6 |
| Set Small Packing Cases | .. | .. | 2/6 | 2/6 |
| Square Water Tower | .. | .. | 4/11 | — |
| 1 Pack of 6 Building Papers, and Sheet | .. | .. | 1/6 | — |
| Celluloid 1/9 value | .. | .. | 1/6 | — |

BOOKS:

| | | | |
|--------------------------------------|----|----|------|
| 60 Plans for Small Railways | .. | .. | 2/6 |
| Buildings in Miniature (Stokes) | .. | .. | 5/- |
| Locos. of B.R. (L.M.R. or W.R.) each | .. | .. | 8/6 |
| G.W.R. Loco. Practice (Holcroft) | .. | .. | 25/- |

POSTAGE EXTRA

"00", "TT" or "0" and Book Lists .. each 6d.

TYLDESLEY & HOLBROOK (M.E.T.A.)
109 DEANSGATE, MANCHESTER 3

Webley

AIR PISTOLS

High Accuracy
and Hitting Power
Perfect Balance

Robust Construction

Send
for

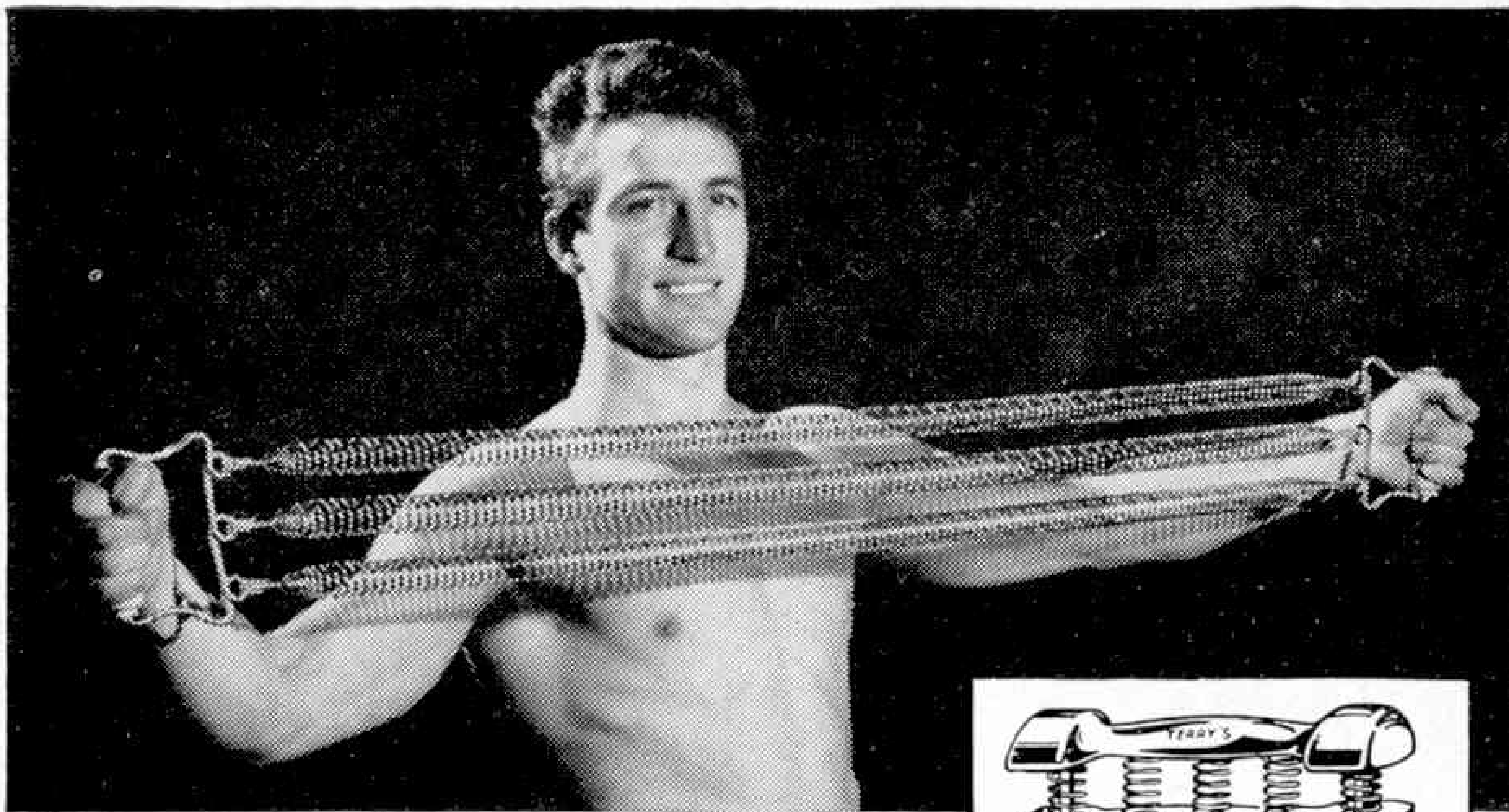
WEBLEY & SCOTT LTD.

24 PARK LANE, HANDSWORTH, BIRMINGHAM 21



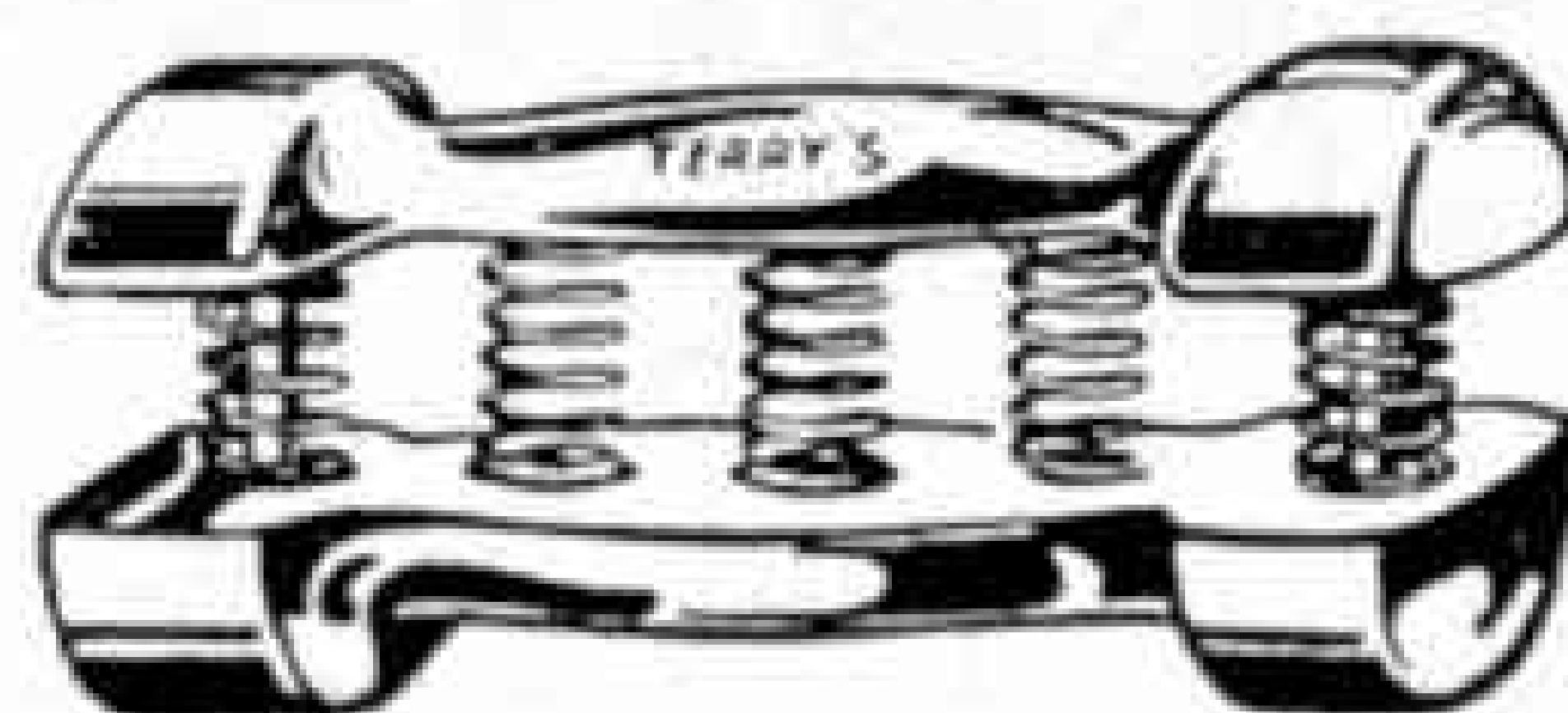
Catalogue

Do you exercise *every* muscle?



When you do you'll be amazed at your increased power for sports and games. The scientific way to develop every single muscle in your body and tone up your entire system is with a Terrys Steelstrand Exerciser. We include a 20 page illustrated book showing all the different ways you can use it both for muscular development and for practice in deep breathing. You begin to feel the benefit at once—stronger and fitter than ever before.

Φ 87



Spring Grip Dumb Bells

2—7 springs, 1 lb. to 3 lb.
14/5 to 27/- pair



Pocket Wrist Exerciser

Hardened tempered steel,
leather grips 3/- each

Please send me without obligation free illustrated book 'The Terry Spring Way to Health'.

Name

Address

.....

.....

Post today to: HERBERT TERRY & SONS LTD,
REDDITCH, ENGLAND.

TERRYS steelstrand EXERCISERS

2 three-loop handles: one 25 lb spring with 20-page book of exercises 15/8. Extra springs can be added.

FROM ALL GOOD SPORTS DEALERS

THE BACK NUMBER SPECIALIST CAN HELP YOU!

Meccano Magazines

| | | | |
|-------------|----|----|----------|
| Before 1940 | } | .. | 1/- each |
| 1953-1957 | | | |
| 1945-1949 | .. | .. | 6d. .. |
| 1940-1944 | } | .. | 9d. .. |
| 1950-1952 | | | |
| 1958-1959 | .. | .. | 1/3 .. |

Railway Magazines

| | | | |
|-----------|----|----|--------|
| 1928-1945 | .. | .. | 2/- .. |
| 1946-1958 | .. | .. | 1/6 .. |

Trains Illustrated

| | | | |
|-----------|----|----|--------|
| 1950-1955 | .. | .. | 1/6 .. |
| 1956-1959 | .. | .. | 2/- .. |

Buses Illustrated

| | | | |
|-----------|----|----|----------|
| 1957-1959 | .. | .. | 2/6 each |
|-----------|----|----|----------|

Model Makers

| | | | |
|-----------|----|----|--------|
| 1951-1956 | .. | .. | 1/- .. |
|-----------|----|----|--------|

Model Railway News

| | | | |
|------------|----|----|--------|
| All Issues | .. | .. | 9d. .. |
|------------|----|----|--------|

Model Railway Constructor

| | | | |
|------------|----|----|--------|
| All Issues | .. | .. | 9d. .. |
|------------|----|----|--------|

LENS of SUTTON,
50 CARSHALTON ROAD,
SUTTON, SURREY

Postage extra on all items please.

BOND'S

MODEL FIBRE GLASS BOAT HULLS

36 inches long.

Motor Yacht Hull, 9 in. beam, will carry 12 lb. of machinery and superstructure, ideal for radio control. Price **£4 19s. 6d.**

Cargo or Liner Hull, 7½ in. beam, will carry 9 lb. of machinery and superstructure, beautifully moulded stern for single propeller. Ideal for radio control. Price **£4 19s. 6d.**

SPECIAL SUPER POWER ELECTRIC MOTOR

12 volts D.C.

This small commercial ball-bearing motor is ideal for driving the above boats. Current consumption from ¼-1 amp. according to loading. Can be supplied from dry batteries at 15 volts. Price **£3 15s. 0d.**

MARINE STEAM PLANT

This plant has been specially designed for 36 in. hulls. The double-acting, slide valve engine is ⅝ in. bore, ½ in. stroke, fitted with cast iron cylinder for super-heated steam. Price **£5 10s. 0d.**

The copper centre flue boiler is 2½ in. diam., 8½ in. overall length, fitted with 1 in. centre flue. Price **£4 10s. 0d.**

The methylated spirit Blow Lamp is complete with large tank and release valve. Price **£2 0s. 0d.**

All Prices are Packing and Carriage Extra

Bond's Model Catalogue Price 2/-
Bond's Tool, Gear and Material Catalogue. Price 1/9

BOND'S O' EUSTON ROAD LTD.

357 EUSTON ROAD, LONDON N.W.1

Est. 1887

Phone: EUSTon 5441-2

LOTT'S Chemistry

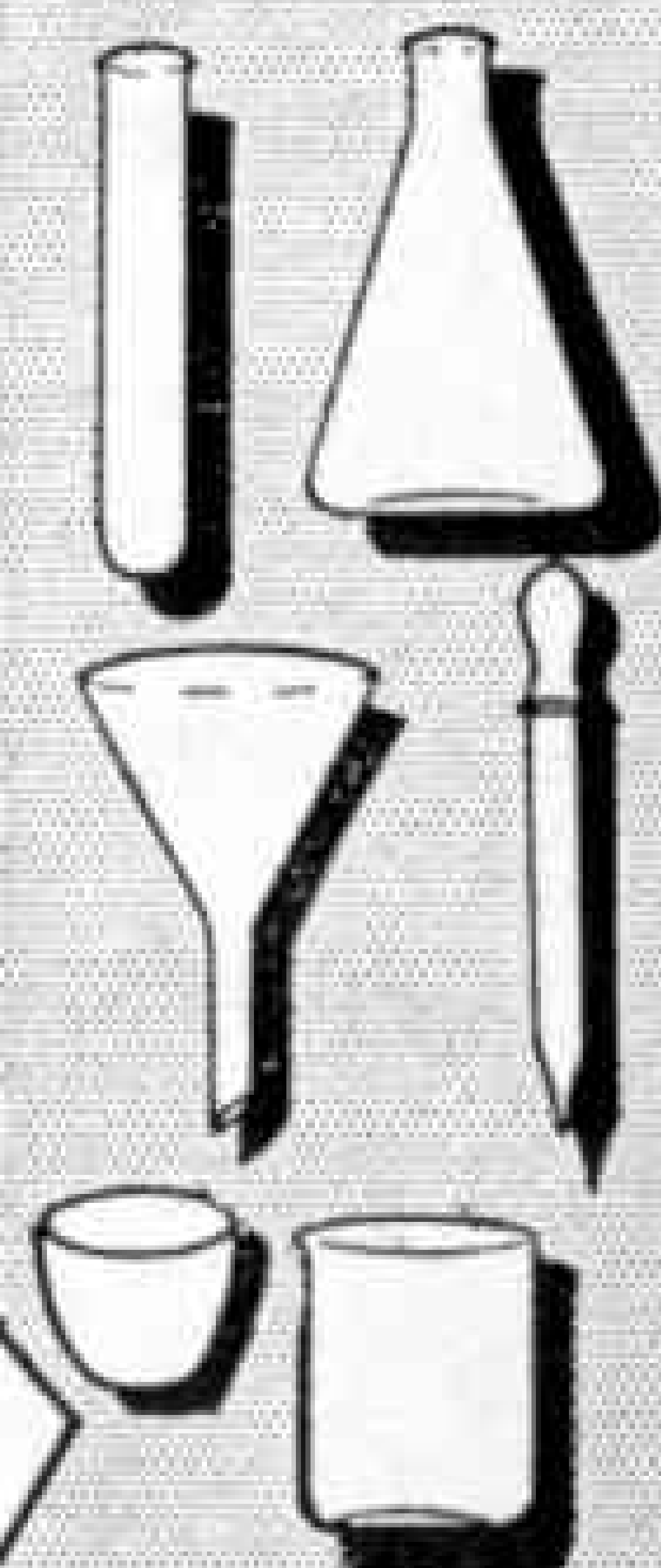
Convert your chemistry set to a student's laboratory by easy stages.

Supplies of spare apparatus and chemicals are now available.

Also Lott's Stone Puzzle together with book of 105 problems.

Ask to see them at your dealer or write to the manufacturers for current price list, enclosing 2d. stamped addressed envelope.

A SMALL SELECTION
FROM OUR LIST



LOTT'S BRICKS LTD
(Dept. M.M. 4) WATFORD · HERTS

Photographers!

Here's everything you need to 'PRINT-IT-YOURSELF'

This inexpensive outfit will set you up to print your own pictures—an absorbing hobby! The equipment includes: Printing Frame ($3\frac{1}{2}'' \times 2\frac{1}{2}''$), packet of See-Thru Masks, 2 Plastic Forceps, 2 Clips, Thermometer, Measure, 2 $\frac{1}{4}$ -plate Dishes, Dark-room Lamp (battery operated), 1 packet of M-Q Developer, 1 packet of Developer 468, 1 tin of Acid Hypo Fixing Powder, 1 100-cc. Azol Developer

ONLY **£1.17.6**

Complete
From Photographic
Dealers Everywhere



JOHNSONS
OF HENDON LTD



Alpine
AND
GAPRI

Two outstanding models "Alpine" Sports and "Capri" Tourist, both designed by Peter Parkes.

Makers of the famous 'SUN WASP'

Please send full details and specifications of the "Alpine" and the "Capri"



Name

Address

CYCLE & FITTINGS Co. Ltd. Dept. M.M., Aston Brook Street, Birmingham 6.



***"Dad's had bags of fun with
his AIRSPORTER..."***



... now I'm having one

... it's a smashing .22 air rifle, just the job for target shooting. Dad says he likes its perfect balance and it couldn't be safer to use. There's the .177 Club and Junior Models Cadet and Cadet Major."

*Send for the interesting colour leaflets
giving full details of B.S.A. Air Rifles*

B.S.A. GUNS LTD., MARSHALL LAKE ROAD,
SHIRLEY · SOLIHULL · WARWICKSHIRE



DON'T MISS THE APRIL RAILWAY MODELLER

- ★ Stephenton—a railway with atmosphere
- ★ Build a Watertower
- ★ TT-3 Trackwork
- ★ Simple Coaling Stage

FROM ALL GOOD
MODELSHOPS &
NEWSAGENTS

2'— (post 2/6)

G. Iliffe Stokes'

BUILDINGS IN MINIATURE

A detailed account of 4 mm
scale building construction to
suit all 00 layouts.

5'—
(post 5/4)

THE PRITCHARD PATENT PRODUCT CO. LTD.
PECOWAY, STATION ROAD, SEATON, DEVON

City of Cardiff Education Committee

(Director of Education—Robert E. Presswood, B.Sc., M.Ed.)

REARDON SMITH NAUTICAL COLLEGE, FAIRWATER, CARDIFF

Principal—J. N. Rose, R.D., M.I.N., Master Mariner

PRE-SEA TRAINING

This Residential College provides a one-year's course of pre-sea training for young men of 16-17 years who wish to become Merchant Navy Officers. Special attention is given to the Cadet's character training, the development of reliability, resourcefulness, trustworthiness and initiative, to the development of the art of leadership and power of command, and to the fostering of a pride in the Merchant Navy as a whole and to their work and standing in particular.

The College has a 43-ton Auxiliary Sailing Vessel used for practical training at sea in the Bristol Channel.

Remission of six months' sea service will be allowed to successful cadets.

Fees for residence and tuition £135. Local Education Authorities should be consulted regarding financial assistance.

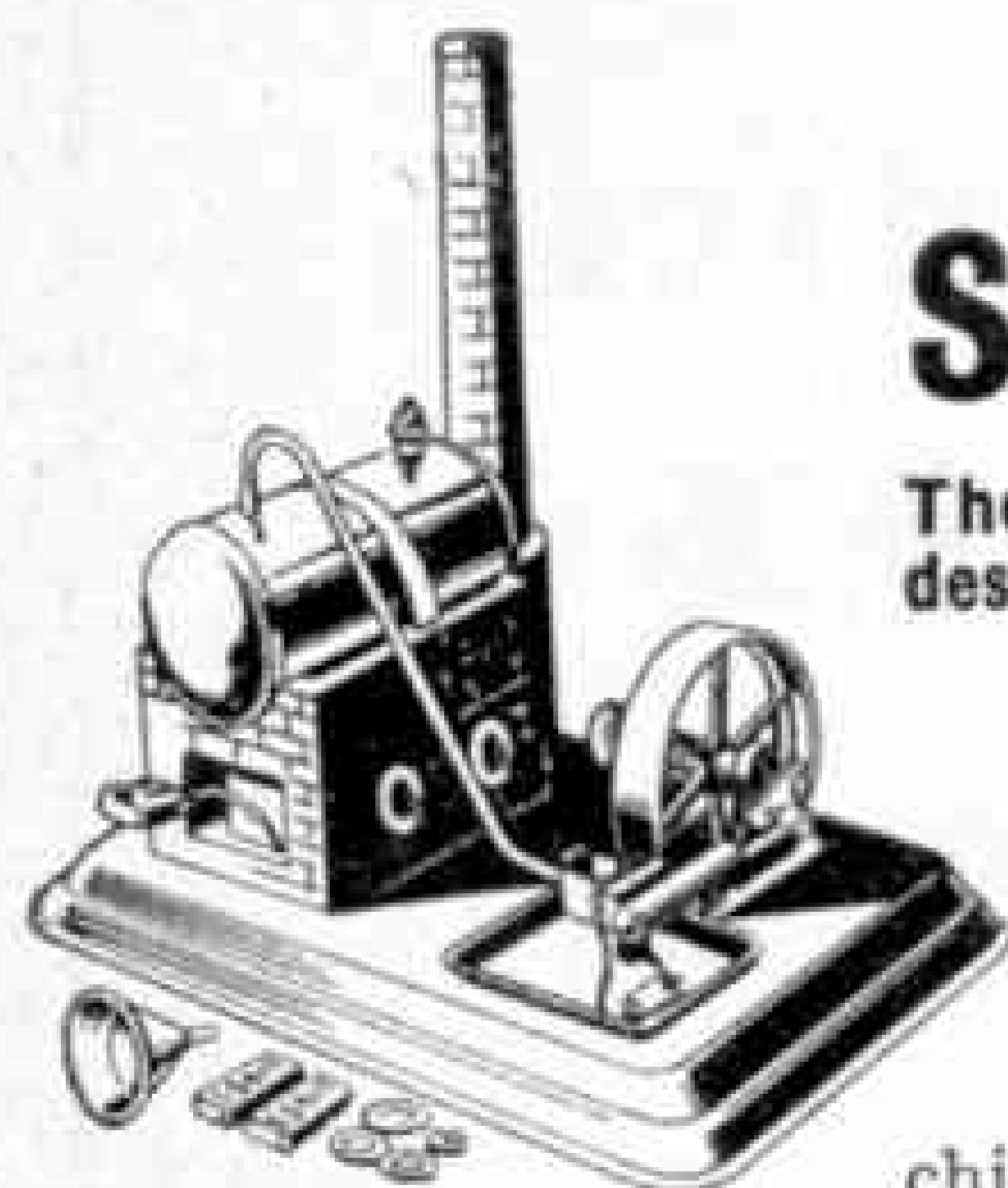
Prospectus and further information may be obtained from the Principal.

Robert E. Presswood,
Director of Education.

City Hall, Cardiff.

GAMAGES

The Best Value in STEAM ENGINES



The famous "Gamage" Engine is perfectly designed, strongly built and meticulously finished. Capable of driving all sorts of models.

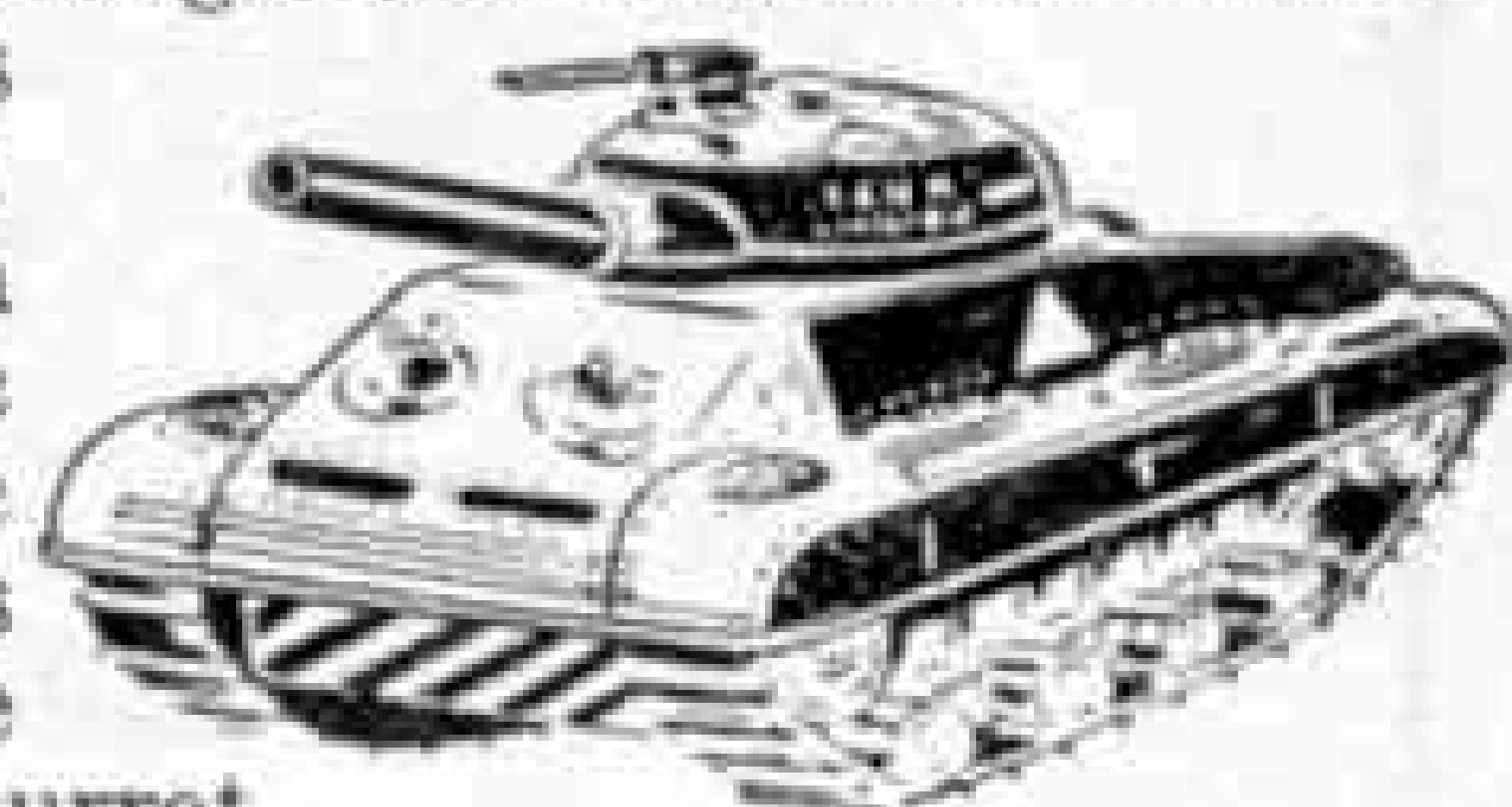
Because of a large contract with a famous German manufacturer we are able to present this superbly constructed model at this very low price. Base $8 \times 5\frac{1}{2}$ in., chimney is $7\frac{1}{2}$ in. tall. Steam plant includes a $3\frac{1}{2}$ in. boiler and $2\frac{1}{2}$ in. flywheel. Complete with dry fuel, fuel holder, funnel and spare washers.

Bargain Price **47'6**

If outside our van delivery area:
Post and Pkg. 2/-

CLOCKWORK COMBAT TANK

Sturdily constructed in colourful printed metal, with a strong clockwork motor which drives the tracks of this giant $9\frac{3}{4}$ in. Tank at a slow realistic speed. The main gun is mounted in the front, and the turret recoils as it sparks.



A superb model.

Bargain Price **22'11**

If outside our van delivery area:
Post and Pkg. 2/6



COMMANDO GUN

An excellent repeater cap firing gun for the small boy, which is very realistic and finely detailed in Black and Brown Plastic and Metal. Takes roll of 50 caps. Length $12\frac{1}{2}$ in. Caps 1d. box. Post and Pkg. 1/-

6'11



REMOTE CONTROLLED HELICOPTER

A beautifully made streamlined model, propelled by hand-operated crank. Strong all-metal construction with plastic rotors. By remote control, it can fly forwards, backwards, and hover. Length $5\frac{1}{2}$ in.

Bargain Price **13'11**

If outside our van delivery area: Post and Pkg. 1/2

GAMAGES
CONJURING
CATALOGUE 1/-
Post 4d.

GAMAGES • HOLBORN • LONDON E.C.1.

HOL. 8484



Kit
No. 3152

7'11
(post 1/3)

SWISS CHALET. Lift the lid to offer a cigarette and it plays a tune.

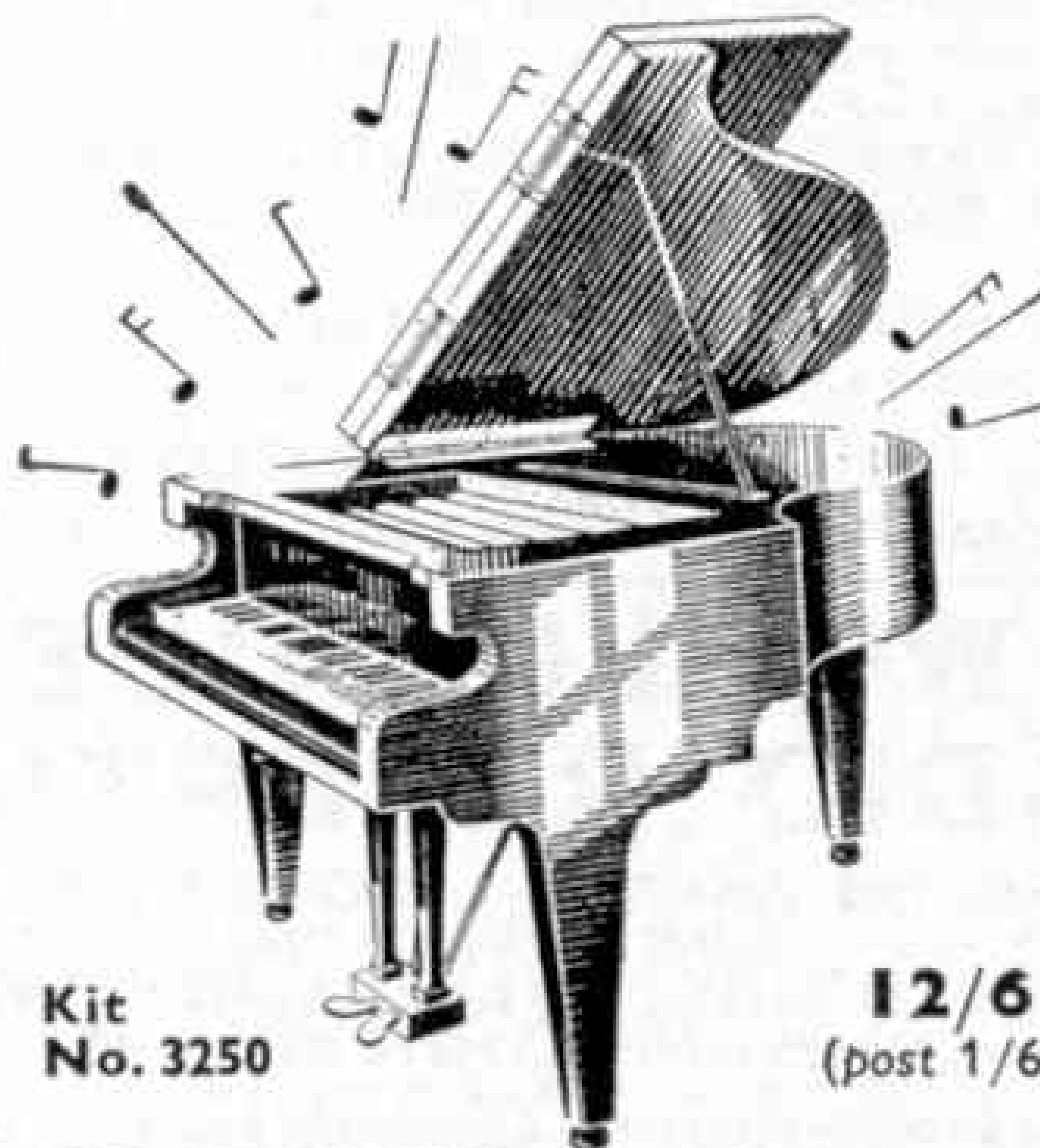
Kits include materials and full instructions for making with a few simple tools. Musical movements are extra. Make your choice of tune from list below.

Musical Movements 15/6 extra (post 6d.). Choose from these tunes: M. Jingle Bells. Q O! My Papa. Y Anniversary Waltz. Z Gounod's Ave Maria.

with

Hobbies
kits &
outfits

From
Branches,
Stockists,
or direct



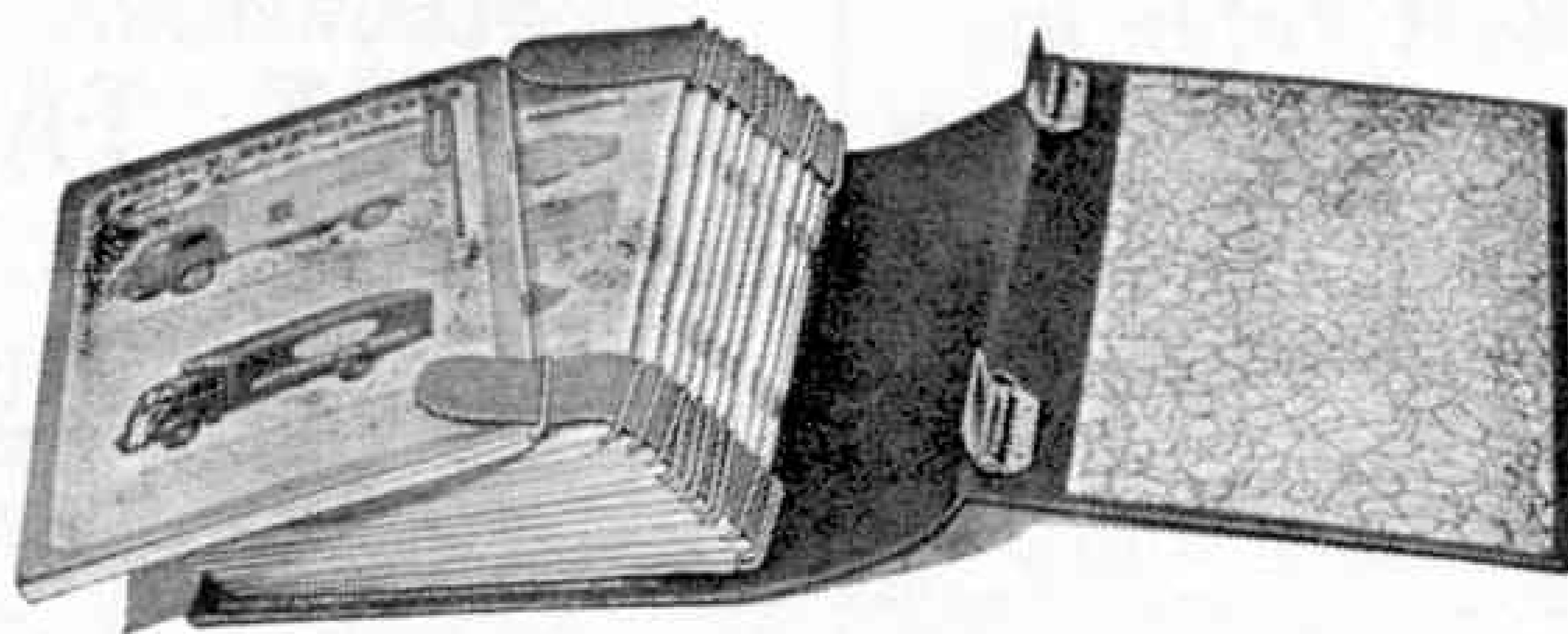
Kit
No. 3250

12/6
(post 1/6)

GRAND PIANO. Kit includes printed keyboard, wood, hinges, etc. Orders 30/- and over, post free.

HOBBIES LTD. (DEPT. 96) Dereham, Norfolk

BINDERS FOR THE M.M.



PRICE

9/6

(post free)

In this useful binder, illustrated above, twelve copies of the Magazine are held in position by specially designed wires on stout and well-secured leather thongs. The cover is in maroon, with "MECCANO MAGAZINE" in gilt. Single copies can be inserted as received.

For your binders, write to "Meccano Magazine", Binns Road, Liverpool 13, enclosing postal order.

MORE NEW WAGON LOADS

DESIGNED SPECIALLY FOR YOUR BOGIE WELL WAGONS

HEAVY GEAR WHEEL complete with special carrying cradle. Finished in steel grey and red oxide.

List No. L/7 3/- Post 4d.

SHIP'S PROPELLER with special carrying cradle. Attractive two-colour finish.

List No. L/8 3/- Post 4d.

SPECIAL ACCESSORY PACK consisting of 4 Ring bolts and nuts and length of scale chain for securing loads to wagons.

List No. GP/10 1/- Post 3d.

S. & B. Wagon Loads are ALL METAL and this means that your loaded wagons run much better due to the scale weight effect. Always ask for S. & B. METAL LOADS.

SEE THE ABOVE ITEMS AND OTHER S. & B. LOADS AND ACCESSORIES AT YOUR LOCAL MODEL SHOP.

Price List of all our "00" Model Railway Accessories, 6d. post free.

S. & B. PRODUCTIONS

Portland Road, S. Norwood, London S.E.25

WORLD WIDE RADIO RECEPTION

FOR THE AMATEUR RADIO ENTHUSIAST
TUNE IN WITH THE
MALVYN SINGLE VALVE SHORT WAVE COMMUNICATION RECEIVER

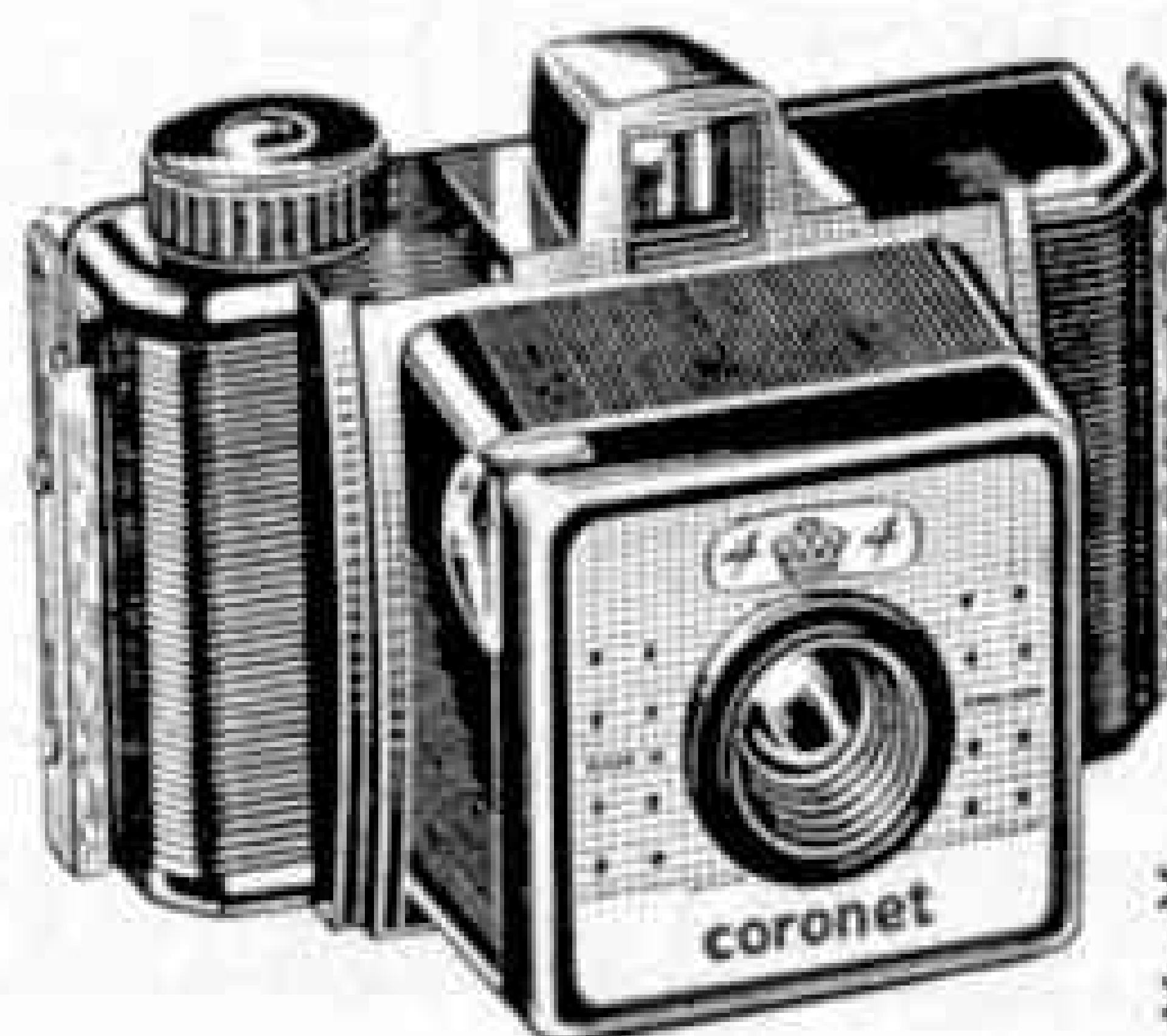
All-Dry Battery operated: Extremely low running costs: Band Spread Tuning: Attractive Front Panel: Full operating instructions included.

PRICE OF COMPLETE RECEIVER, 74/6 (Batteries and Phones Extra). Post Free U.K. Money Back Guarantee. Send S.A.E. to actual Manufacturers for Free Descriptive Literature.

MALVYN ENGINEERING WORKS

Radio and Electronic Engineers

Tel.: Hertford 2264 7 Currie Street, HERTFORD



**IT'S NEW
IT'S FOR
YOU!**

* 21/- inc. P. Tax
* Sold everywhere

* For 127 size roll film
* The very latest

coronet



Coronet Ltd., Dept. 28, Summer Lane, Birmingham 19

The ERG Catalogue

of

00 Model Railway Supplies

Price 1/6 (by post 1/10)

"CARDBOARD ROLLING STOCK AND HOW TO BUILD IT" (now including "CARDBOARD PASSENGER STOCK"). Price 4/6 (by post 4/10)

ERG (Bournemouth) LTD

529 Roumelia Lane, Boscombe, Bournemouth

SHIP PHOTOGRAPHS. Post-card size. 10/- per dozen. Send 3d stamp for list.

J. MANNERING, River House, River, DOVER

**DON'T LET SOLDERING
TIE YOU UP IN KNOTS...**



use **FLUXITE**

Soldering ceases to be a knotty problem the moment you use FLUXITE. Solder flows on easily and smoothly—and stays on. For over half a century FLUXITE has been the choice of craftsman and engineer alike and, in this age, its reliability and speed has made FLUXITE even more in demand than ever.

**IT
SIMPLIFIES
ALL
SOLDERING**



FLUXITE LTD.

Bermondsey Street, London S.E.1

GM.77

Do you know



WHO INVENTED THE PNEUMATIC TYRE?

In 1888, the pattern of road travel—which until then had been a slow and bumpy business—changed almost overnight. For this was the year in which John Boyd Dunlop invented the first practicable pneumatic tyre.

His early experiments were carried out with canvas and with sheet rubber supplied by a Belfast chemist, fitted to a crude wooden disc. By 1889, enough progress had been made to fit the new tyres to a racing bicycle. Ridden by William Hume at a sports meeting at Queen's College, Belfast, it won every event for which it was entered.

The successful use of these tyres on bicycles then caught the attention of the owners of the "horseless carriages" of the nineties. With the repeal of the "Red Flag" Act in 1896, which had limited speeds to 4 m.p.h., a new impetus was given to the development of the motorcar. Everything began to go faster, in much greater comfort. The demand for Dunlop tyres grew and grew.

*Think of tyres and you
think of **DUNLOP***

LUNAR ROCKET LANDINGS



MOONSCOPES 99/6!!

or complete set as listed below
5/- WEEKLY. DEPOSIT £1

See the Moon at close quarters. Examine the huge craters and possible evidence of coming rocket landings. Observe Saturn's rings, Nebulae, outer galaxies, Sputniks, etc.

Specification. 2 in. dia. Astro Refracting Telescope, length 39 in. mag. 53X linear (equivalent to 2809X area), weight 1 lb. 12 oz. Superior hammer-beaten finish. Price 99/6. Regd. post and packing, including strong stowing cylinder, 12/-.

Accessories. Altazimuth Portable Clamp Stand, 37/6, p./p. 2/6. Fixes anywhere. High Power Eyepiece 80X Linear, 30/-, p./p. 2/- (brings Moon within approx. 2,875 miles range).

Inclusive Postages for Complete Set, 15/-. Stamp for full particulars, photographs 1/- set (returnable). Made to order.

J. K. M. HOLMES & CO. LTD.

Scientific Instrument Makers (Dept. MM10),
MARTINS BANK CHAMBERS, 33 BEDFORD STREET,
NORTH SHIELDS, NORTHUMBERLAND

G.C.E.

Wolsey Hall (est. 1894) can prepare you *successfully* by post for all G.C.E. examinations; Lond. Univ. Degrees, and many other exams. Moderate fees, instalments. 30,000 successes since 1930. Prospectus (mention exam.) from E. W. Shaw Fletcher, C.B.E., LL.B., Dept. GK5, **WOLSEY HALL, OXFORD**

P.B.K. CANOES

Plans, Materials and Accessories, etc.
G. G. HINTON (2) Abbey Fleet, Lechlade, Glos. S.A.E.

PHOTO-CARDS SHIPPING

including vintage famous liners, Clyde steamers.
Send 1/6 List specimen.
ELDER, 38 Westview Road, Barrow-in-Furness

STAMP ADVERTISEMENTS

(see also pages 210 and 212)

LOOK!

BARGAIN VALUE FOR YOU IN PACKETS

Write today for our comprehensive free list of 200 "all different" packets, including

| | | |
|------------------|-----------------|-----------------|
| 50 Argentine 1/6 | 100 Czech 2/- | 200 Germany 2/6 |
| 100 Austria 1/9 | 100 Denmark 2/- | 100 Holland 2/- |
| 50 Canada 1/6 | 100 Finland 3/- | 100 Hungary 1/9 |
| 100 China 1/6 | 100 France 1/6 | 150 Italy 3/- |

Postage Extra

Subject unsold

Approvals also available only by request

APEX STAMPS (FP), 29 Rock Road, Trowbridge, Wilts.

MYSTERY EXCHANGE PACKETS!

Exchange your "twicers" FREE from our guaranteed unsorted Free Exchange Packets which have circulated the World over. Different, profitable and interesting without payment. Details with 5 different GOLD COAST also FREE with APPROVALS. Dealers supplied. Overseas Agents Wanted.

ASTLEY & CO. (M)

103 CADMAN CRESCENT, WOLVERHAMPTON

TRIANGLE PKT. 30 FREE CHINA FLYING DOVES

TRIANGLES 1951 PEACE & MONACO Set of 2 Transport Triangles, Giro and Pigeons, plus 26 other stamps free. Send 3d. post and request approvals. ROSEBERRY STAMP SERVICE (Dept. B), 37 Rosebery Rd., Epsom, Surrey

TEN DIFFERENT ENGINES ON STAMPS FREE!

This amazing Free Gift will be sent to those who request my Approvals and send 3d. stamp for postage.

JOHN H. ABEL, 65 Belfield Road, Paignton, Devon

GREAT BRITAIN

Duplicates from 60 years collecting, also COLONIALS, etc. Selections on Approval at cheap clearance prices.
HILLIER — 35A NORTHDOWN AVENUE — MARGATE

Cigarette Cards and Stamps

100 Clean

Cigarette

Cards 2/6

Post Free

Used Foreign
and Empire
Stamps.

Packets 3d. and
6d. Postage 2d.

LENS of SUTTON

50 Carshalton Rd., Sutton, Surrey

AMAZING INTRODUCTORY OFFER

FREE 1. Genuine Stamp Tweezers. 2. Packet of stamp hinges. 3. 25 British Colonial stamps to all applicants for our wonderful discount (2/6 in £) Approvals enclosing 3d. towards postage. Club membership open to all.

BERRY'S APPROVALS

194 Sutherland Avenue, Welling, Kent

CORO

S.W. AFRICA '53 2d.
CATALOGUED 4/-
FREE WITH

4d. in 1/- Discount Approvals.

P. MAUND, 31 WOODBRIDGE ROAD, BRISTOL 4

HULA GIRLS ★ 3 latest Fr. POLYNESIA colourful pictorials. FREE to all sending 3d. post for Disc. Approvals. (not overseas). S. REY (HU) 33 Whitelands Ave., Chorleywood, Herts.



Build your layout with **WRENN** Trackwork

YOU CAN
part-exchange
existing trackwork
for **WRENN**
Trackwork

ASK FOR OUR
TRACK
CONVERSION
PLAN

This fascinating book tells you all about building your own layout with track you can cut and curve to suit your own ideas. It contains a number of attractive layout plans and all you want to know about point wiring, track sectioning and solenoid operation.



Send for this Handbook

PRICE **1/3** POST FREE

SOUTHGATE HOBBYSHOP 5, THE BROADWAY, LONDON, N.14
Near Southgate tube PAL 4258



MEET PETER MAY at RUSSELL HILLSDON'S ON WEDNESDAY, APRIL 8

ENGLAND'S CAPTAIN WILL BE HERE TO HELP CUSTOMERS IN THEIR CHOICE OF CRICKET BATS WHICH HE WILL THEN AUTOGRAPH (Stuart Surridge—formerly England, and Surrey Captain—will be in the Store.)

Illustrated
Catalogue
free on
request

Schoolboys, Club Secretaries and all Cricketers will be welcome. Don't miss this opportunity to meet England's Captain. For those who cannot come along, Peter May will sign all bats ordered by post.

RUSSELL HILLSDON Ltd.

46 SOUTH STREET, CHICHESTER, SUSSEX
THE SPORTS STORE OF THE SOUTH

HEAR ALL CONTINENTS

WITH H.A.C. SHORT-WAVE RECEIVERS

Noted for over 18 years for
S.W. Receivers and Kits of Quality.

Improved design with Denco coils:

One-Valve Kit, Model "C".....Price 25/-
Two-Valve Kit, Model "E".....Price 50/-

All kits complete with all main components and full instructions. (Valves extra if required, 8/- each). Before ordering call and inspect a demonstration receiver, or send stamped, addressed envelope for descriptive catalogue.

"H.A.C." SHORT-WAVE PRODUCTS
(Dept. M.M.), 11 Old Bond Street, London W.1.

CHEMISTRY APPARATUS



Send 3d. stamp for
LATEST

PRICE LIST

Booklets:

'EXPERIMENTS'

1/2.

'FORMULÆ' 1/2.

'HOME CHEMISTRY'

new edition 2/10.

(Post Free)

BECK

(SCIENTIFIC DEPT. G), 60 High St.,
STOKE NEWINGTON, LONDON N.16

READERS' SALES AND WANTS

SALES

Ninety "M.M.s" October 1947–October 1958. Offers—Partridge, School House, Suckley, Worcester.

Hornby Gauge 0 Scale-model Clockwork No. 2. Special Locomotive 4-4-0 L.N.E.R. "The Bramham Moor", with Tender and Bogie Coach. Boxed in new condition. £5 or offers. Also special reversed Switch Points 3/- each.—Rogers, 5 Rivers Street, Bath.

Marklin Steam Engine—Horizontal Double Acting—mounted on Baseplate Driving 2.5 volt Lighting Set. Pulleys fitted to drive models. £5 for quick sale—Hawks, 20 Choulston Close, Netheravon, nr. Salisbury, Wilts.

"M.M.s" 1951 to November 1957 inclusive, 25/- postage extra.—Clarke, 41 Haldon Road, Exeter.

Bassett-Lowke 0 Gauge Electric Track with a 12 volt Controller. S.A.E. for details.—A. P. Barber, 167 Brooke Road, Oakham.

Forty-three copies of "The Second Great War Magazine" 1942-46. Good condition. Offers—28 Egghill Lane, Birmingham 31.

"M.M.s" No. 2, November 1916 to No. 43, January 1924, except Nos. 3, 15, 16, 20. Good condition. Offers please. Obsolete Meccano No. 5 Inventors' Accessory Outfit, 4 Manuals, and many additional parts in three original boxes, purchased 1915-1917. In excellent condition. Offers to—Barrett, Delvine, Beaminster, Dorset.

"M.M.s" July 1946 to January 1953, good condition, £3 or highest offer.—Chadwick, 83a Queen's Road, Oldham.

Gauge 0 4-4-2 Clockwork Locomotive, obsolete Rolling Stock, Points and Rails, all in good condition. £8 o.n.o. Stanley Gibbons 1957 Catalogue as good as new 13/- o.n.o. Details S.A.E.—J. T Grundy, 94 Wellington Road, Bury, Lancs.

Bassett-Lowke 0 Gauge 40 ft. Track. Two Locomotives, Points. Details—Taylor, 62b The Avenue, Beckenham, Kent.

HORNBY LOCOMOTIVE
PART EXCHANGE COUPON

Complete this coupon, and hand it, with your old clockwork locomotive, to your Meccano dealer, who will deduct the appropriate amount, as shown below, from the cost of a new Hornby-Dublo Locomotive or Train Set.

| Old Loco | Allowance | Indicated by cross which type exchanged |
|----------------------|-----------|-----------------------------------------|
| MO or No. 20 | 3/- | |
| M1 or No. 30 | 5/- | |
| Nos. 101 or 40 Tank | 7/6 | |
| No. 501 or No. 50/51 | 9/- | |

Type of Hornby-Dublo Locomotive or Train Set purchased in exchange.....

Purchaser's signature.....

Address

DEALER'S CERTIFICATE

The above exchange has been effected in accordance with the terms of the Hornby Part-Exchange Scheme.

Signed.....
Meccano Dealer

Dealer's Name.....

Address

Date..... U.K. (only)

MECCANO
MAGAZINE

Registered at the G.P.O., London, for transmission by Canadian Magazine Post.

EDITORIAL AND ADVERTISING OFFICES:
LIVERPOOL 13, ENGLAND.
Telegrams: "Meccano, Liverpool."

Readers' Sales and Wants. Private advertisements (i.e. not trade) are charged 2d. per word, minimum 2/-. Cash with order. Readers' advertisements are published as soon as possible, inclusion in the first issue after receiving them cannot be guaranteed.

Advertisements of goods recently and currently manufactured by Meccano Ltd. cannot be accepted.

WANTS

Hornby Clockwork 0 Gauge Locomotive 4-4-0 "The Bramham Moor", two No. 2 Corridor Coaches, Metropolitan type Locomotive and one "Nestles Milk" Tank Wagon. Good condition.—T. Heaslip, 28 Grace Avenue, Bexleyheath, Kent.

"M.M.s" before 1921, Nos. 2-10, 12-15, £1 each issue paid if in good condition. Would accept other issues, bound or loose, if including any or all wanted issues. Good prices also paid for books of New Models, Prize Models, Super Model Leaflets, Instruction Books, Catalogues, and any other Pre-War Meccano Booklets. Various Pre-War Literature available for exchange. Details—Daniels, 67 Holly Road, Twickenham, Middx.

Exchange: Pre-War Marklin Instructions Books, Vertical Meccanograph Manual for No. 10 Set, draws 200 wonderful patterns, old Leaflets Nos. 4, 10, 22 and 25 for old "M.M.s", Super Model Leaflets, Obsolete Parts, etc.—Andreas Konkoly, Budapest xiii, Katona J—U28, Hungary.

Books and Magazines on Aviation including R.A.F. Flying Reviews pre-1956; Flights pre-1946; Air Pictorial pre-1956; Jane's All the World Aircraft, any before 1947, especially early issues; Aircraft Fighting Powers; anything on World War One flying; state price and condition.—John Pidler, 69 Downs Road, Ramsgate, Kent.

Tickets of Closed Railway Stations. Name Stations, state price.—C. Freeman, 4 Walton Road, Gosport, Hants.

Super Model Leaflets Nos. 1, 13, 14a, 16a, 28, 35, 36, 37, Meccano Steam Engine. 6 and 20 volt Resistance Controllers. Nos. 1 and 2 Elektron Sets. Any Kemex Sets, Meccano Instruction Books, Catalogues, anything else Pre-War, Bound Meccano Magazines any year. Details etc.—K. Ellender, 37 Blandford Avenue, Long Eaton.

Obsolete Dinky Toys, Chrysler Airflow's, Town Sedan's, Lorries, Cars, Buses, Trains, Guy Weetabix Van, Foden Mobilgas, Trams, Aeroplanes, Ships, anything to do with Dinky's.—John Shelford, 5 Argyle Road, Bognor Regis, Sussex.

"AIRFIX" PLASTIC KITS

| | | |
|----------------------------------------------------------------------------------------------------------------------------------------------|------|-----------|
| "00" Level Crossing, Station Acces., Bungalow, Platform Fittings, Track-side Acces. | each | 2/- |
| "00" Air Cont. Tower, Church, Footbridge | each | 2/- |
| Mustang, Spitfire, M.E.109, Lysander, Stuka, MIG 15, FW190, Hurricane, SR53, Albatross, RES, Whirlwind, Bristol Fighter, Westland Helicopter | each | 2/- |
| Mosquito, Beaufighter, Lightning, Swordfish | each | 3/- |
| Wellington | each | 6/- |
| Lancaster | each | 7/6 |
| "Kitmaster" Diesel Electric "00" gauge | each | 4/6 |
| Paints Pack (6 assorted colours) | each | 2/- |
| Plastic Cement in tubes, | | 4d. & 6d. |

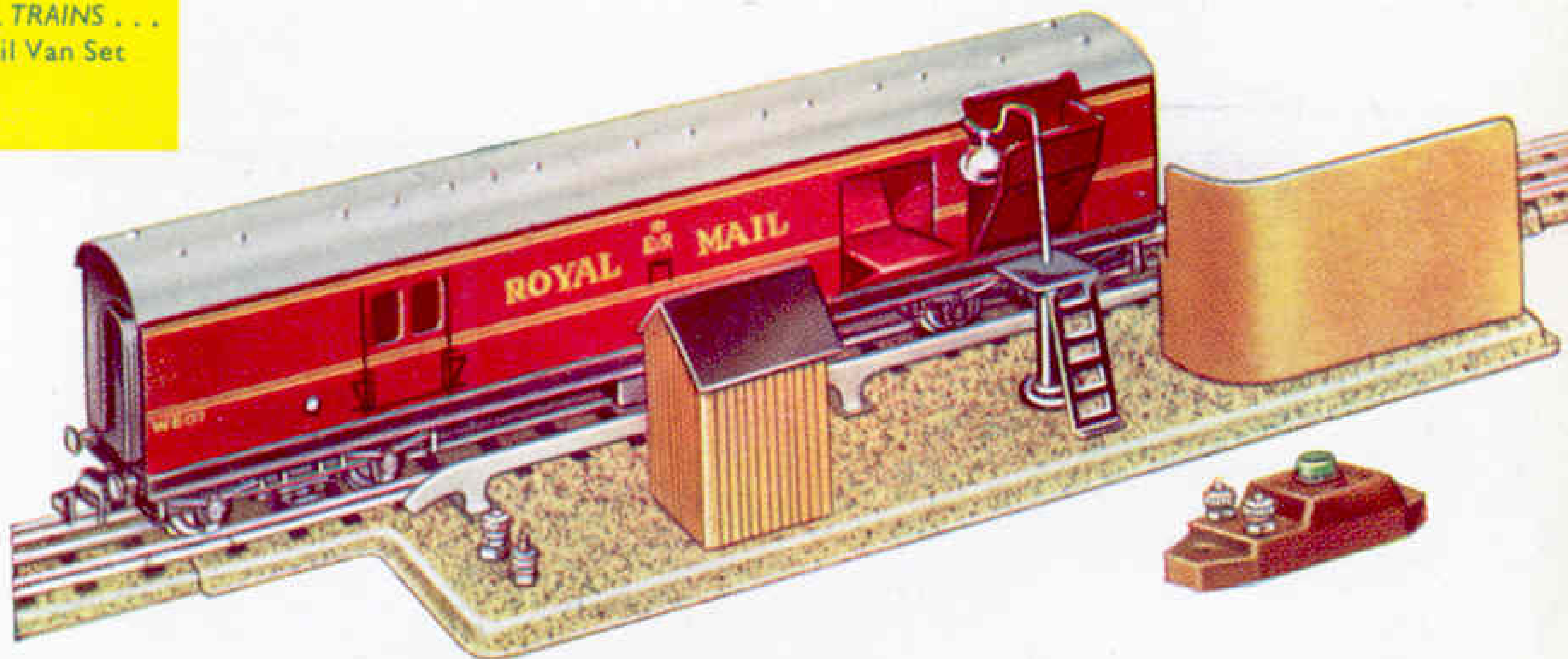
Postage 6d. extra on any order

E. JOHNSON & CO.,
Narrowgate, Alnwick, Northumberland
Est. 1814 Tel.: Alnwick 2510

HORNBY DUBLO

Does your Hornby-Dublo railway
include these fine accessories?

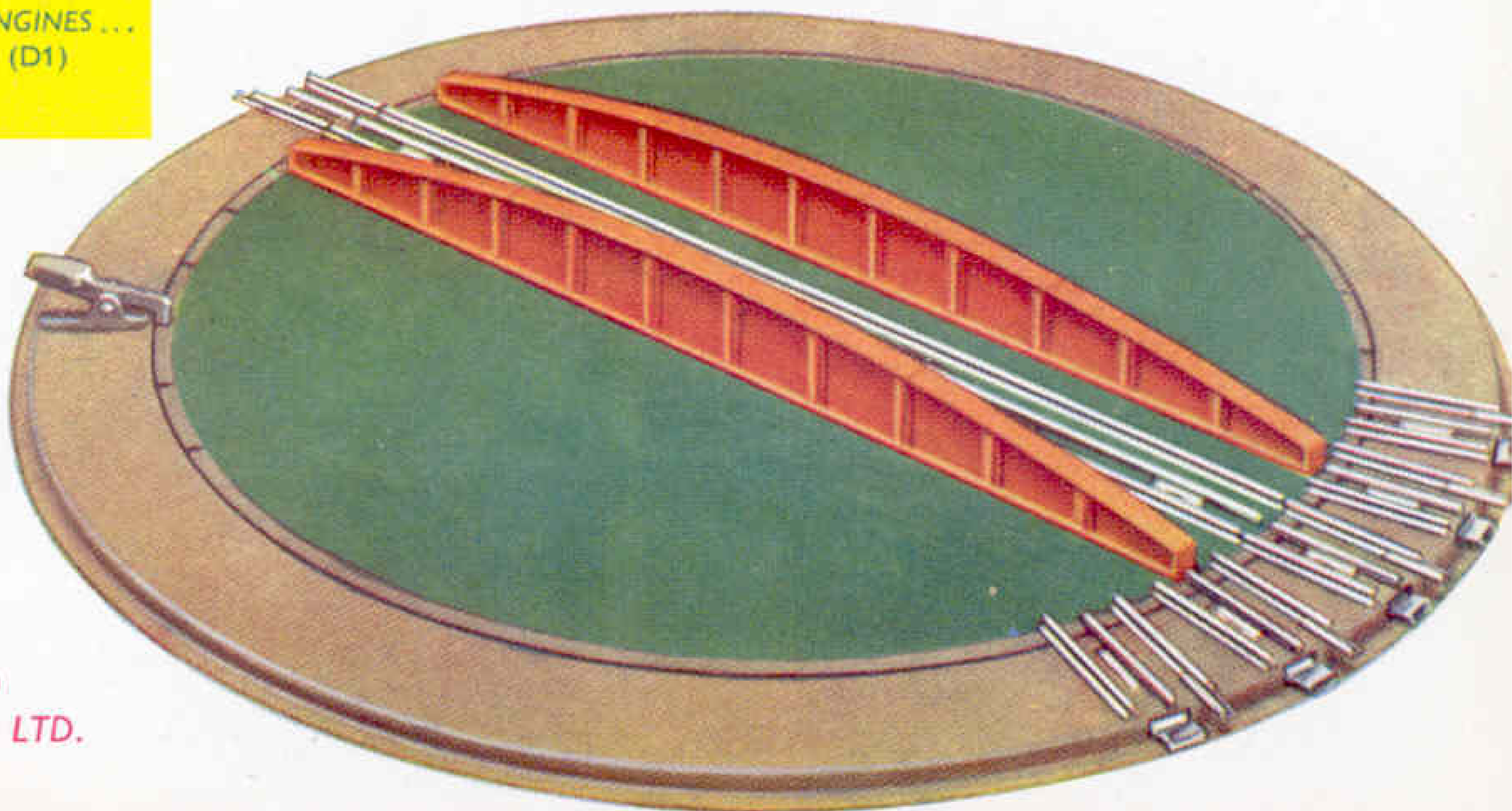
RUNNING MAIL TRAINS . . .
3400 T.P.O. Mail Van Set
(D1)
Price 39/6



CROSSING RIVERS . . .
5015 Girdler Bridge (D1)
Price 17/11



TURNING THE ENGINES . . .
3470 Turntable (D1)
Price 47/6



All Prices
include
Purchase Tax

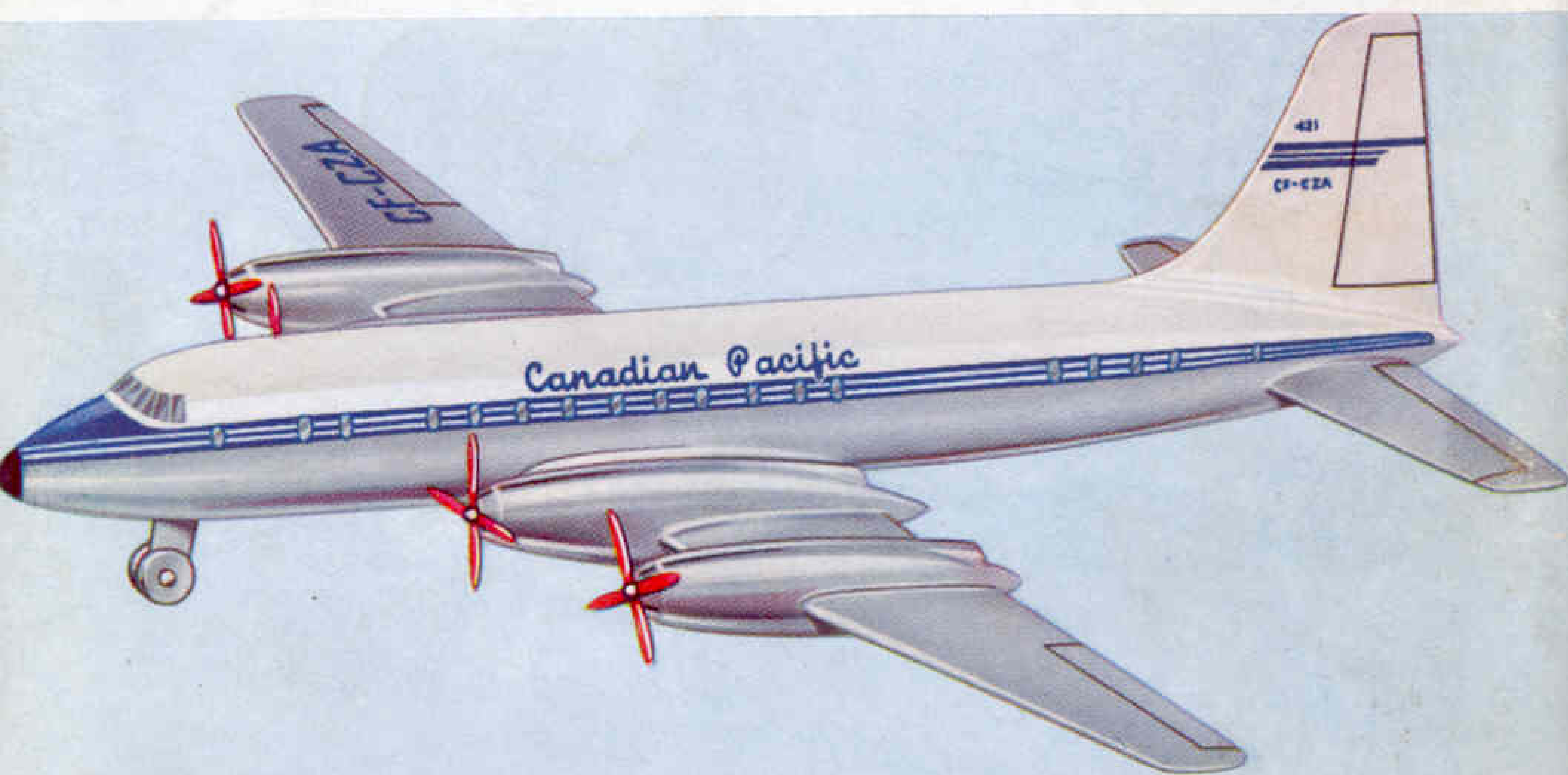
MADE AND
GUARANTEED
BY MECCANO LTD.

DINKY SUPERTOYS

TRADE MARK REGISTERED

New

for April . . The "Whispering Giant"



DINKY SUPERTOYS No. 998 — BRISTOL BRITANNIA AIRLINER

A perfect miniature of a Canadian Pacific Bristol Britannia. From nose to tail an immaculately detailed model of the airliner that, because of its size—a wingspan half the length of a football field and weighing 180,000 pounds—and its extreme quietness in flight, became known as the "Whispering Giant". Flying high above the weather at 36,000 ft. and speeding through the sky at 400 m.p.h. the Britannia is a really exciting airliner. And its Dinky Supertoys model—accurate in every detail and superbly finished in Canadian Pacific colours—is just as exciting. This splendid new model is in the shops now—see it at your dealers today.

Wing Span: 8 $\frac{7}{8}$ in.

U.K. Price: 9/6 (inc. tax)

DUBLO

DINKY TOYS

TRADE MARK REGISTERED

No. 068 ROYAL MAIL VAN

Just the thing for meeting the Hornby-Dublo Mail Train—a new Royal Mail Van to the scale of 00 Gauge Railways. With moulded non-scratch wheels and die-cast body, this model will add up-to-date realism to any miniature railway scene.

Length: 1 $\frac{7}{8}$ in. U.K. Price: 2/3 (inc. tax)



MADE IN ENGLAND BY MECCANO LIMITED, BINNS ROAD, LIVERPOOL